



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>



5
59
. A3

THIRTY-EIGHTH ANNUAL REPORT

OF THE

INDIANA

STATE BOARD OF AGRICULTURE.

VOLUME XXX—1888-1889.

**INCLUDING THE PROCEEDINGS OF THE ANNUAL MEETING, 1889; MEETING
OF CATTLE BREEDERS, SWINE BREEDERS, WOOL GROWERS, BEE
KEEPERS, CANE GROWERS, STATE FLORISTS, AND STATE
HORTICULTURAL ASSOCIATION, 1889.**

TO THE GOVERNOR.

INDIANAPOLIS:
WM. B. BURFORD, CONTRACTOR FOR STATE PRINTING AND BINDING.
1889

INDIANAPOLIS, March 2, 1889,

HON. ALVIN P. HOVEY,

Governor of Indiana :

SIR—In compliance with the act of the General Assembly approved February 17, 1852, we have the honor to submit herewith the annual report of the Indiana State Board of Agriculture for the year ending December 31, 1888, together with such matter as is deemed interesting and useful.

Very respectfully,

JASPER N. DAVIDSON, President.

ALEX. HERON, Secretary.

THE STATE OF INDIANA,
GOVERNOR'S OFFICE,
June 27, 1889. }

The within report has been received and examined by the Governor and referred to the Auditor of State for verification of the financial statement.

OFFICE OF AUDITOR OF STATE,
INDIANAPOLIS, June 29, 1889. }

The financial part of the within report, so far as it relates to money drawn from the State Treasury, has been examined by me and found correct.

BRUCE CARR, Auditor of State.

Returned by the Auditor of State with the above certificate and transmitted to the Secretary of State for publication, upon the order of the Board of Commissioners of Public Printing and Binding.

WILLIAM B. ROBERTS, Private Secretary.

Received and filed in the office of Secretary of State, within and for the State of Indiana, this June 29, 1889.

CHARLES F. GRIFFIN, Secretary of State.

CONTENTS.

	PAGE.
Record Table	6
Districts by Counties	8
State Industrial Association Directory, 1889	9
Weather Record	10
Introductory	16
Ten Years' Review of Indiana Crops and Statistics	17
Proceedings February, Executive and State Fair Meetings	63
Proceedings Annual Meeting, 1889.	70
Address by Hon. I. P. Gray, Governor of State	95
Reports of Department Superintendents	88
Discussion—Value and Importance of County Fairs	98
Trades and Profession Connected with Agriculture	122
Is there Enough Stock Kept on the Farms of Indiana to keep up the Fertility of the Soil?	117
How can the Soil be Most Profitably Cultivated? by Hon. Jno. Q. A. Seig	120 and 219
Award of State Fair premiums	129
Classified Exhibits	173
Farmer's Institutes	182
Essay—"Woman's Work," by Mrs. Ida A. Harper.	214
"How to Secure better Results in Farming," by Hon. W. B. Seward.	223
"Forest and Drouths," by Daniel Berry, M. D	226
"Healthy Homes," by Dr. Felix L. Oswald	232
Report of State Chemist on Commercial Fertilizers	235
Reports from County and District Societies	246
Table of Officers, Entries, Premiums, Receipts, etc., of County Societies	296
Proceedings of Indiana Horse Breeders and Veterinarians	308
Proceedings of Indiana Short-Horn Breeders	314
Proceedings of Indiana Jersey Breeders	355
Proceedings of Indiana Wool Growers	377
Proceedings of Indiana Swine Breeders	414
Proceedings of Indiana Poultry Breeders	441
Proceedings of Indiana Bee-Keepers	460
Proceedings of Indiana Cane Growers	472
Proceedings of Indiana State Florists	492
Proceedings of Indiana State Horticultural Society	534

MEMBERS OF THE INDIANA STATE BOARD OF AGRICULTURE, 1888.

- 1st District—ROBERT MITCHELL, Princeton, Gibson County.
 - 2d District—GERARD REITER, Vincennes, Knox County.
 - 3d District—J. Q. A. SIEG, Corydon, Harrison County.
 - 4th District—W. B. SEWARD, Bloomington, Monroe County.
 - 5th District—V. K. OFFICER, Volga, Jefferson County.
 - 6th District—DICK JONES, Columbus, Bartholomew County.
 - 7th District—E. H. PEED, New Castle, Henry County.
 - 8th District—S. W. DUNGAN, Franklin, Johnson County.
 - 9th District—R. C. McWILLIAMS, Rockville, Parke County.
 - 10th District—JASPER N. DAVIDSON, Whitesville, Montgomery County.
 - 11th District—ROBERT SIMONTON, Huntington, Huntington County.
 - 12th District—JOHN M. BOGGS, Lafayette, Tippecanoe County.
 - 13th District—WILLIS BLANCHE, Kokomo, Howard County.
 - 14th District—J. A. McCLUNG, Rochester Fulton County.
 - 15th District—W. A. BANKS, Door Village, Laporte County.
 - 16th District—R. M. LOCKHART, Waterloo, Dekalb County.
-

OFFICERS FOR 1888.

- | | |
|-----------------------------------|-------------------------|
| HON. JASPER N. DAVIDSON | President. |
| W. A. BANKS | Vice President. |
| ALEX. HERON | Secretary. |
| SYLVESTER JOHNSON | Treasurer. |
| R. M. LOCKHART | General Superintendent. |
-

EXECUTIVE COMMITTEE.

- | | |
|-------------------------------------|-----------------|
| HON. JASPER N. DAVIDSON, President. | |
| W. B. SEWARD, | WILLIS BLANCHE, |
| ROB'T MITCHELL, | E. H. PEED. |

A TABLE Showing the Officers, Place and Receipts of Each Fair Held by the State Board of Agriculture.

YEAR.		PRESIDENT.	SECRETARY.	TREASURER.	GENERAL SUPERINTENDENT.	PLACE OF FAIR.	PREMIUMS PAID.	RECEIPTS OF FAIR.
1852	1853	Gov. Joseph A. Wright.	John B. Dillon . . .	Royal Mayhew . . .	W. T. Dennis . . .	Indianapolis	. . . . .	\$4,651 55
1854	1855	Gov. Joseph A. Wright.	John B. Dillon . . .	Royal Mayhew . . .	J. J. Bingham . . .	Lafayette . . .	. . . . .	6,751 55
1855	1856	Gov. Joseph A. Wright.	Wm. T. Dennis . . .	Royal Mayhew . . .	W. T. Dennis . . .	Madison . . .	. . . . .	7,430 77
1856		Gen. Joseph Orr. . . .	John B. Dillon . . .	S. A. Buell.	Calvin Fletcher, Jr. .	Indianapolis	\$3,753 00	10,823 75
		Dr. A. C. Stevenson . .	Ignatius Brown . . .	S. A. Buell.	Calvin Fletcher, Jr. .	Indianapolis	4,225 00	14,373 34
1857	1858	Dr. A. C. Stevenson . .	Ignatius Brown . . .	S. A. Buell.	Calvin Fletcher, Jr. .	Indianapolis	1,127 00	14,058 75
1858	1859	Dr. A. C. Stevenson . .	John B. Dillon . . .	Thomas H. Sharp . .	Calvin Fletcher, Jr. .	Indianapolis	. . . . .	11,500 00
1859	1860	George D. Wagner. . .	John B. Dillon . . .	Thomas H. Sharp . .	James L. Bradley . .	New Albany . .	6,163 00	8,599 50
1860	1861	George D. Wagner. . .	Wm. T. Dennis . . .	Thomas H. Sharp . .	James L. Bradley . .	Indianapolis	3,827 09	11,902 00
1861		D. P. Holloway	Wm. T. Dennis . . .	H. A. Fletcher. . . .	. . . . .	No Fair . . . . .	. . . . .	. . . . .
1862	1863	James D. Williams . .	W. H. Loomis	H. A. Fletcher. . . .	J. A. Grosvenor . . .	Indianapolis	3,994 00	4,127 55
1863	1864	A. D. Hamrick	W. H. Loomis	H. A. Fletcher. . . .	J. A. Grosvenor . . .	Indianapolis	. . . . .	9,559 36
1864	1865	Stearns Fisher.	W. H. Loomis	Francis King	W. H. Loomis	Indianapolis	4,121 00	10,785 50
1865	1866	Stearns Fisher.	W. H. Loomis	Carlos Dickson	J. A. Grosvenor . . .	Fort Wayne . .	4,078 00	11,597 55
1866		Stearns Fisher.	W. H. Loomis	Carlos Dickson	J. A. Grosvenor . . .	Indianapolis	. . . . .	17,179 36
1867	1868	A. D. Hamrick.	A. J. Holmes	Carlos Dickson	J. B. Sullivan	Terre Haute . .	6,331 00	17,148 06
1868	1869	A. D. Hamrick.	A. J. Holmes	Carlos Dickson	J. B. Sullivan	Indianapolis	7,087 00	16,799 00
1869	1870	A. D. Hamrick.	A. J. Holmes	Carlos Dickson	J. B. Sullivan	Indianapolis	7,517 00	22,345 65
1870	1871	J. D. Williams.	Joseph Poole	Carlos Dickson	J. S. Benson	Indianapolis	7,914 00	19,155 23
1871		J. D. Williams.	Joseph Poole	Carlos Dickson	Jacob Mutz.	Indianapolis	8,564 00	20,549 90
1872	1873	John Sutherland	Alex. Heron	Carlos Dickson	H. W. Caldwell . . .	Indianapolis	9,619 20	23,484 35
1873	1874	John Sutherland	Alex. Heron	Carlos Dickson	H. W. Caldwell . . .	Indianapolis	8,864 75	52,309 10
1874	1875	John Sutherland	Alex. Heron	Carlos Dickson	E. J. Howland. . . .	Indianapolis	10,754 00	45,330 48
1875	1876	William Grim	Alex. Heron	Carlos Dickson	E. J. Howland. . . .	Indianapolis	12,068 20	43,214 99
1876		Hezekiah Caldwell . . .	Alex. Heron	Carlos Dickson	J. L. Hanna	Indianapolis	8,179 30	6,342 70
1877	1878	Jacob Mutz	Alex. Heron	Carlos Dickson	J. W. Furnas	Indianapolis	6,337 95	14,511 00
1878	1879	W. B. Seward	Alex. Heron	Carlos Dickson	R. M. Lockhart . . .	Indianapolis	5,057 00	15,991 33
1879	1880	Robert Mitchell	Alex. Heron	Carlos Dickson	R. M. Lockhart . . .	Indianapolis	5,472 00	22,919 50
1880	1881	W. H. Ragan	Alex. Heron	J. A. Wildman	Fielding Beeler . . .	Indianapolis	6,553 00	18,809 05
1881		R. M. Lockhart	Alex. Heron	J. A. Wildman	Fielding Beeler . . .	Indianapolis	6,855 50	17,874 00
1882	1883	H. C. Meredith	Alex. Heron	J. A. Wildman	Fielding Beeler . . .	Indianapolis	8,096 00	25,631 10
1883	1884	Robert Mitchell	Alex. Heron	J. A. Wildman	Fielding Beeler . . .	Indianapolis	9,581 13	26,858 43
1884	1885	Robert Mitchell	Alex. Heron	S. Johnson	Fielding Beeler . . .	Indianapolis	10,414 30	24,479 40
1885		R. M. Lockhart	Alex. Heron	S. Johnson	Fielding Beeler . . .	Indianapolis	9,000 50	26,555 11

1886	W. B. Seward	Alex. Heron	S. Johnson	H. B. Stout	Indianapolis	9,419 00	26,522 84
1887	W. B. Seward	Alex. Heron	S. Johnson	Chas. E. Merrifield	Indianapolis	9,726 50	28,370 65
1888	J. N. Davidson	Alex. Heron	S. Johnson	R. M. Lockhart	Indianapolis	9,917 50	22,120 90
1889	J. N. Davidson	Alex. Heron	S. Johnson	C. E. Merrifield	Indianapolis . . . . .	. . . . .	. . . . .

A. C. Jameson filled the office of Treasurer for 1878 to the 27th of August, when he resigned, and Carlos Dickson was appointed to fill the unexpired term. H. C. Meredith died July 5th, and L. B. Custer, Vice President, came in as President for the unexpired term.

NOTE—In consequence of the loss of papers, incident to the military occupancy of the rooms of the State Board of Agriculture during the late war, and incomplete records preserved, the amount of premiums awarded at the several State fairs is necessarily incomplete.

AGRICULTURAL DISTRICTS.

The following order for Agricultural Districts was adopted by the Delegate Beard at the Annual Meeting, 1883:

That Article IV of the Constitution of the Indiana State Board of Agriculture be amended to read as follows: "Members are chosen for two years, one-half of whose term expire each year, to-wit: Those representing first, second, third, fourth, eighth, fourteenth, fifteenth and sixteenth districts, as herein constituted, expire at the annual meeting in 1884; and those representing the fifth, sixth, seventh, ninth, tenth, eleventh, twelfth and thirteenth districts to be elected at this meeting, expire at the annual meeting to be held in January, 1885, the election to be by ballot."

- 1st District—Posey, Vanderburgh, Gibson, Warrick and Spencer counties.
- 2d District—Knox, Daviess, Martin, Pike, Dubois, Crawford and Perry counties.
- 3d District—Harrison, Washington, Orange, Floyd, Clark and Scott counties.
- 4th District—Jackson, Lawrence, Brown, Monroe, Greene, Owen and Sullivan counties.
- 5th District—Jefferson, Switzerland, Ohio, Dearborn, Franklin, Ripley and Jennings counties.
- 6th District—Bartholomew, Decatur, Rush, Fayette, Union and Wayne counties.
- 7th District—Madison, Hancock, Hamilton, Henry and Shelby counties.
- 8th District—Marion and Johnson counties.
- 9th District—Clay, Vigo, Parke, Vermillion and Fountain counties.
- 10th District—Putnam, Morgan, Hendricks, Montgomery and Boone counties.
- 11th District—Delaware, Randolph, Jay, Adams, Wells, Huntington and Blackford counties.
- 12th District—Carroll, White, Benton, Newton, Tippecanoe, Warren, Jasper and Pulaski counties.
- 13th District—Clinton, Tipton, Howard, Grant, Wabash and Whitley counties.
- 14th District—Elkhart, Kosciusko, Fulton, Cass and Miami counties.
- 15th District—St. Joseph, Marshall, Starke, Laporte, Porter and Lake counties.
- 16th District—Allen, Dekalb, Steuben, Lagrange and Noble counties.

STATE INDUSTRIAL ASSOCIATIONS.

OFFICERS FOR THE YEAR 1889.

Headquarters at Agricultural Rooms, in the State House.

Indiana State Board of Agriculture.—President, Hon. J. N. Davidson, Whitesville, Montgomery County; Secretary, Alex. Heron, Indianapolis. Organized May, 1851.

Indiana Horticultural Society.—President, Dr. A. Furnas, Danville, Hendricks County; Secretary, C. M. Hobbs, Bridgeport, Marion County. Organized 1842.

State Association of Shorthorn Breeders.—President, Judge J. A. Buckles, Muncie, Grant County; Secretary, H. G. C. Bala, Indianapolis. Organized May, 1872.

Indiana Horse Breeders' Association.—President, Dr. Chas. E. Wright, Indianapolis; Secretary, J. S. Darnell, Lebanon, Boone County. Organized January, 1885.

Indiana Jersey Cattle Breeders' Association.—President, D. H. Jenkins Indianapolis, Marion County; Secretary, W. C. Smock, Indianapolis. Organized January, 1843.

Indiana Swine Breeders' Association.—President, John Bebout, Rushville; Secretary, J. W. Pierce, Peru, Miami County. Organized January, 1877.

Indiana Wool Growers' Association.—President, I. N. Cotton, Trader's Point, Marion County; Secretary, J. W. Robe, Greencastle, Putnam County. Organized October, 1876.

Indiana Poultry Breeders' Association.—President, Wm. Tobin, Indianapolis; Secretary, Major Griffin, Mauzy, Rush County. Reorganized January, 1887.

Indiana Bee-Keepers' Association.—President, Dr. E. H. Collins, Mattsville, Hamilton County; Secretary, Geo. C. Thompson, Southport, Marion County. Organized October, 1879.

Indiana Cane Growers' Association.—President, A. S. Chapman, Madison, Jefferson County; Secretary, A. B. Denny, Cicero, Hamilton County. Organized December, 1882.

Indiana Tile Makers' Association.—President, J. J. W. Billingsley, Indianapolis, Marion County; Secretary, T. A. Randall, Indianapolis. Organized November, 1876.

Indiana Woman's State Fair Association.—President, Mrs. A. M. Noe, Indianapolis; Secretary, Mrs. H. L. Seward, Indianapolis. Organized September, 1878.

Indiana State Florists' Association.—President, M. A. Hunt, Terre Haute; Secretary, Wm. G. Berterman, Indianapolis. Organized February, 1887.

METEOROLOGICAL TABLES.

TABLE I.

Showing Monthly Mean Barometer, Thermometer, Relative Humidity; Maximum and Minimum Temperature; Prevailing Direction of Wind; Number of Clear, Fair and Cloudy Days; Average Amount of Cloudiness; Number of Days on Which 0.01 Inch or More Precipitation Fell; Total Amount of Precipitation and Number of Days on Which the Temperature Fell Below the Freezing Point in Indianapolis, Ind., for Each Month of the Year 1888, as Recorded in the Signal Office at Indianapolis, Indiana.

MONTHS.	Mean Barometer Reduced to Sea Level—Inches.	Mean Temperature—Degrees.	Relative Humidity—Per cent.	Maximum Temperature—Degrees.	Minimum Temperature—Degrees.	Prevailing Direction of Wind.	Number of Clear Days.	Number of Fair Days.	Number of Cloudy Days.	Average cloudiness During the Month Scale, 0 to 10.	Number of Days on which 0.01 inch or More of Precipitation Fell.	Total Amount of Precipitation—Inches.	No. Days on which Min. Temperature Fell Below Freezing.
January . . .	30.250	23.3	78.4	59.8	-6.0	NW	11	14	13	6.4	11	2.81	28
February . . .	30.086	30.5	74.2	59.8	-2.1	S	8	7	11	5.9	11	1.45	23
March	30.111	35.7	70.0	67.0	8.8	NW	9	8	14	5.9	11	4.26	20
April . . .	30.154	52.6	54.2	83.3	30.9	NW	11	13	6	4.1	9	4.05	3
May	29.940	60.5	62.3	86.2	36.0	E	6	25	11	5.8	11	4.73	0
June	29.954	72.9	63.2	96.4	45.3	SW	9	16	5	4.1	10	2.65	0
July	30.047	75.2	64.8	94.8	57.5	NE	12	13	6	3.8	7	3.33	0
August	30.041	71.1	70.6	97.5	61.1	SW	10	13	8	4.8	11	5.84	0
September . .	30.063	60.9	65.8	87.9	33.7	NE	14	9	7	8.1	6	1.11	0
October	30.014	48.5	71.1	78.4	32.0	SE	10	6	15	5.4	14	4.08	0
November . .	30.111	42.4	77.1	76.0	11.1	NW	10	1	19	5.4	11	5.07	10
December . .	30.142	34.0	73.4	58.0	11.4	S	11	4	17	4.4	10	1.91	19
Annual means	30.062	50.6	68.8	78.8	27.3	NW	..	..	..	5.1	10.3	3.45	8.6
Annual totals	..	..	..	..	..	..	111	111	134	..	124	41.96	103

TABLE II.

Table Showing Daily and Monthly Mean Temperature at Indianapolis, Indiana, for each Day and Month of the year, 1888, as Recorded at the Signal Office at Indianapolis, Indiana.

(Fahrenheit)

Date.	Jan.	Feb.	Mar.	A									
1	21.0	31.0	50.3	62.7	41.0	59.3	77.5	81.0	60.5	62.0	61.0	35.0	
2	24.0	31.0	43.3	45.3	51.0	58.0	74.0	81.0	61.5	45.0	64.0	34.0	
3	24.3	35.7	26.7	46.7	68.0	58.3	81.0	83.5	66.0	41.0	48.5	35.0	
4	46.3	36.3	25.7	55.7	67.3	62.7	78.0	75.5	69.5	50.5	52.5	34.0	
5	41.0	27.3	24.0	63.3	59.0	74.3	76.5	74.0	62.0	56.5	61.5	38.0	
6	57.0	26.0	22.3	48.7	68.3	77.0	81.0	74.0	62.0	52.0	44.0	35.5	
7	35.3	29.7	29.0	50.3	66.0	69.0	78.5	72.5	67.0	51.5	42.5	37.5	
8	20.7	13.3	33.3	49.7	69.3	74.7	74.5	72.5	73.0	50.5	56.5	43.0	
9	27.0	4.7	41.7	51.3	61.0	71.7	70.0	65.0	69.5	44.5	58.0	38.0	
10	20.7	19.0	42.3	53.3	69.0	70.7	71.0	68.5	66.5	45.5	40.5	39.5	
11	9.7	24.7	30.7	53.0	74.0	62.3	76.0	74.0	70.0	49.0	39.0	32.0	
12	24.0	33.7	25.7	41.0	54.0	65.7	79.5	68.5	65.5	44.5	41.5	28.0	
13	21.7	38.0	23.3	47.0	49.7	76.3	66.0	65.0	54.0	46.0	48.5	26.0	
14	25.0	31.3	29.3	51.7	43.0	79.7	66.5	70.5	57.5	48.5	52.0	24.0	
15	0	17.3	41.7	57.3	43.7	78.3	70.0	77.0	60.5	49.0	48.5	37.5	
16	8.3	32.7	40.3	44.0	52.0	61.3	72.5	74.0	56.5	48.0	39.0	47.5	
17	17.7	36.7	36.7	57.0	52.3	84.7	72.0	74.5	53.5	45.5	30.5	35.5	
18	6.0	47.3	48.0	51.7	56.3	63.3	76.5	71.5	61.0	47.5	37.5	26.0	
19	17.3	49.7	54.7	44.7	52.3	84.3	72.5	73.0	66.5	50.0	37.0	26.0	
20	11.7	37.0	45.0	40.3	58.7	82.7	69.5	67.0	68.5	40.5	33.5	26.0	
21	12.3	32.3	23.0	46.7	63.3	75.3	74.5	68.5	63.0	39.0	30.5	26.0	
22	20.0	39.3	13.7	49.3	65.7	77.0	75.5	62.5	64.0	44.0	32.0	24.5	
23	24.7	44.7	24.3	44.7	62.3	76.7	75.0	63.0	60.0	42.5	35.5	35.5	
24	34.3	44.7	28.0	43.3	68.3	76.3	74.0	66.0	60.0	45.5	37.5	42.5	
25	25.7	30.0	35.0	53.0	63.0	74.0	76.0	71.0	55.5	51.5	34.0	47.5	
26	13.3	17.7	49.0	65.0	69.7	76.3	78.0	70.5	57.5	57.0	30.0	43.0	
27	20.7	9.7	35.3	67.7	75.0	70.7	77.5	70.0	51.5	57.5	35.0	28.5	
28	17.3	23.0	34.3	69.7	68.0	67.7	74.5	66.0	47.5	44.0	36.5	26.5	
29	31.7	42.0	41.7	69.0	64.7	67.7	79.0	67.5	48.0	50.0	37.5	30.5	
30	38.7	...	52.7	51.7	68.7	72.0	81.5	70.5	49.0	46.5	35.5	36.0	
31	33.0	...	50.0	...	62.0	...	82.5	68.0	...	57.5	...	36.0	

1888.	23.3	30.5	35.7	52.6	60.5	72.9	75.2	71.1	60.9	46.5	42.4	34.0
-------	------	------	------	------	------	------	------	------	------	------	------	------

TABLE III.

Table Showing the Highest and Lowest Temperature in Degrees (Fahrenheit) at Indianapolis, Ind., During Each Month of the Year 1872 to 1888, Inclusive, as Recorded at the Signal Office.

MONTH.	1872.		1873.		1874.		1875.		1876.		1877.		1878.		1879.		1880.		1881.		1882.		1883.		1884.		1885.		1886.		1887.		1888.	
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.			
Jan.	47	-6	60	-13	63	1	44	-18.5	69	9	58	-11	54	-2	57	-22	66	20	47	-6	61.5	7	45	-11	56.8	-25	51.7	-11.3	55.3	-15	64.4	-11.8	59.8	-6.0
Feb.	58	-4	63	1	59	17	55	-8	66	-3	63	20	61	18	58	-1	65	14	59	1	65	15	72	4	65.2	-1.6	59	-9	54.5	-4.2	66.2	10.5	59.8	-2.1
March . . .	61	17	64	2	72	20	77	9	72	11	73	9	72	23	74	15	70	21	62	18	70.5	24	68.4	12	69.5	5	63.8	3.2	75.9	15.6	69.6	15.8	69.0	8.8
April . . .	83	32	81	32	71	27	79	19	77	29	80	28	80	35	82	21	83	27	78	20	80	24	85.3	30.4	80.5	31.4	78.3	27	84	24.5	85.0	22.4	83.3	30.9
May	84	43	86	47	89	40	88	34	86	33	88	31	81	35	87	36	85	40	89	44	80.5	37	82.8	35	84	40.6	87.7	35.3	87.1	39.1	89	49.0	86.2	36.0
June	93	56	94	62	96	50	91	51	91	51	89	45	91	50	91	47	91	54	92	48	94	45	89	50	92.8	54.7	90.1	41.1	89	46.9	94.0	49.4	96.4	45.3
July	95	65	91	60	97	58	92	63	63	61	90	54	96	58	96	58	93.5	55	101	57	89	53	92	56.8	90	55.2	94.5	47.5	94.8	50.9	100.8	58.6	94.8	57.5
August . . .	96	51	95	61	95	56	87	51.5	89	48	89	57	92	53	93	53	94	51	101	55.5	90	52	91	53	89	50.2	95.1	47.7	92.2	53	99.0	49.2	97.5	48.9
Sept	92	44	87	42	90	41	90	35	88	42	85	42	88	44	80	38	89	41	94.5	48	85	42	87	40.4	90.3	44.8	83.8	38.4	90.2	43.3	93.1	34.0	87.9	33.7
Oct.	82	33	76	25	78	28	75	28	75	26	83	35	81	23	86	30.5	78	31	81	39	79	35.5	81	35	87	31.2	77.8	31.4	82.3	31.7	82.4	22.3	78.4	32.0
Nov.	62	-1	59	13	71	-2	61	14	73	18	61	9	65	25	75	18.5	63	-5	63	10	72	22	65	10	66.8	12.3	69.8	23.7	71.6	16.5	73.5	3.8	76.0	25.7
Dec.	48	-11	62	12	61	12	68	-1	47	-15	67	20	48	-12	64	5	56	-13	63	14	57	-10	62	9	60.7	-12.3	56.3	-2.1	57.7	-3.5	57.0	-3.0	56.0	17.4

TABLE IV.

Annual Means for the Years 1872 to 1888, Arranged for Comparative Purposes, as Compiled from the Records of the Signal Office at Indianapolis, Ind.

YEAR.	Mean Barometer Reduced to Sea Level—Inches.	Mean Temperature—Degrees.	Mean Relative Humidity—Per Cent.	Maximum Temperature During the Year—Degrees.	Minimum Temperature During the Year—Degrees.	Prevailing Direction of Wind.	Number of Clear Days.	Number of Fair Days.	Number of Cloudy Days.	Average Amount Cloudiness—Scale 0 to 10.	No. of Days on which 0.01 Inch or more of Precipitation fell.	Total Amount of Precipitation.	Greatest Precipitation in any 3 Consecutive hours—Inches and Hundredths.	No. of Days on which the Maximum Temperature was below Freezing.	No. of Days on which the Minimum Temperature was below Freezing.	No. of Days on which the Temperature was above 90°
1872.	30.044	50.8	67.5	96.0	-11.0	SW.	86	142	139	5.0	122	34.07	3.71	49	120	17
1873.	30.004	52.0	69.2	95.0	-13.0	SW.	97	141	127	5.0	145	52.92	3.73	38	89	9
1874.	30.037	55.0	63.0	97.0	-2.0	NW.	97	150	118	5.0	120	43.60	2.61	17	83	27
1875.	30.005	50.5	66.1	92.0	-18.5	W.	81	138	146	5.0	155	54.58	2.86	44	107	5
1876.	29.997	53.2	68.1	93.0	-15.0	W.	83	126	157	6.0	155	57.53	2.70	30	101	9
1877.	30.008	54.0	67.2	90.0	-11.0	SW.	98	141	128	5.0	139	39.08	2.07	20	84	0
1878.	29.946	55.4	64.6	96.0	-12.0	SE.	84	159	122	6.0	148	39.62	2.03	17	88	13
1879.	30.036	53.9	64.4	96.0	-22.0	S.	94	135	136	5.0	122	42.88	2.33	27	98	12
1880.	30.030	54.4	65.4	94.0	-13.0	W.	106	145	115	5.0	123	50.99	2.00	28	91	9
1881.	30.024	54.9	67.4	101.0	-6.0	SW.	100	140	125	5.0	112	48.74	4.30	19	78	31
1882.	30.045	53.8	71.1	94.0	-10.0	NW.	107	141	117	5.3	141	53.68	3.02	23	106	4
1883.	30.059	51.8	66.2	92.0	-11.0	SW.	96	157	111	5.4	164	54.12	3.71	35	91	6
1884.	30.044	52.5	67.6	92.8	-25.0	S.	99	144	123	5.6	159	39.99	2.16	40	91	5
1885.	30.019	49.3	73.9	95.1	-11.3	SW.	92	153	120	5.5	147	39.51	2.87	42	111	15
1886.	30.039	51.0	71.3	94.8	-15.0	S.	106	150	107	5.2	138	39.88	2.11	47	127	13
1887.	30.044	52.7	66.0	100.8	-11.8	NW.	113	146	106	5.2	119	33.08	1.89	31	120	34
1888.	30.062	50.6	68.8	97.5	-6.0	NW.	113	119	134	5.1	124	41.36	2.62	36	103	17

Verified and corrected at the office of the Chief Signal Officer of the Army, Washington.

TABLE V.

Table Showing Monthly Mean Barometer Reduced to Sea-Level (and since 1875 to Sea-Level), at Indianapolis for Each Year, from 1872 to 1888 Inclusive, as Recorded at the Signal Office.

MONTHLY MEAN BAROMETER (Inches).

MONTH.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.
January	30.130	30.056	30.120	30.232	30.107	30.160	30.022	30.151	30.026	30.136	30.159	30.162	30.188	30.156	30.053	30.031	30.250
February	30.008	30.044	30.099	30.129	30.070	30.156	29.917	30.112	30.049	30.092	30.101	30.283	30.060	30.028	30.114	30.156	30.086
March	30.043	30.030	30.044	29.999	29.982	30.013	29.912	30.073	30.059	29.824	30.088	30.057	30.040	30.095	29.975	30.055	30.121
April	29.960	29.896	30.016	29.964	29.978	29.898	29.746	29.969	29.946	29.963	30.027	29.965	29.948	30.014	30.029	29.999	30.154
May	29.988	29.895	29.940	29.922	29.963	29.992	29.904	29.951	29.974	29.967	29.955	29.940	29.956	29.909	29.925	29.974	29.940
June	29.976	29.905	29.925	29.948	29.881	29.907	29.896	29.954	29.947	29.906	29.907	29.931	30.009	30.013	29.951	29.992	29.954
July	29.964	29.982	29.954	29.935	29.957	29.931	29.912	29.627	29.957	29.965	30.012	30.012	29.918	29.964	29.936	29.975	30.047
August.	30.032	30.013	29.952	29.945	30.001	29.926	29.876	29.951	29.976	30.005	29.981	30.050	30.034	29.946	29.982	29.994	30.041
September	29.997	30.632	30.020	30.020	29.954	29.997	30.050	30.081	30.033	30.017	30.067	30.043	30.052	30.025	30.084	30.076	30.082
October	30.095	30.062	30.093	29.999	29.972	29.983	30.028	30.108	30.062	30.130	30.034	30.090	30.153	29.973	30.198	30.086	30.014
November	30.112	30.010	30.116	30.037	29.990	30.038	30.010	30.078	30.207	31.163	30.177	30.161	30.131	30.001	30.051	30.994	30.155
December	30.218	30.125	30.165	29.936	30.109	30.097	30.082	30.080	30.124	30.170	30.152	30.136	30.156	30.106	30.169	30.095	30.142

TABLE V—Continued.

MONTHLY MEAN TEMPERATURE IN DEGREES, FAHRENHEIT.

MONTH.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.
January.	26.6	24.5	35.5	20.0	38.6	27.8	34.5	26.5	45.9	23.7	31.6	24.5	21.6	22.5	22.2	24.4	23.3
February	29.6	30.3	35.6	21.2	37.0	39.2	39.0	30.1	38.7	29.8	42.2	32.0	34.7	20.5	28.2	34.6	30.5
March	35.0	37.9	41.6	37.4	37.5	35.5	49.9	42.5	41.6	36.8	44.8	36.1	41.1	33.0	39.4	38.2	35.7
April	55.0	51.2	45.8	49.3	52.0	53.8	58.6	52.3	55.2	47.5	53.3	50.3	50.2	51.5	54.6	52.3	52.6
May	64.3	63.9	66.6	62.3	65.7	61.9	61.6	66.2	68.4	70.2	58.5	60.9	62.1	60.5	64.3	67.3	60.5
June.	73.0	76.7	76.2	70.8	71.9	71.5	69.6	71.4	73.3	72.8	71.6	71.5	73.2	68.8	69.2	73.8	72.9
July.	77.7	75.3	78.3	75.6	77.7	75.8	79.1	79.5	75.9	79.4	72.6	75.1	73.7	76.3	74.3	80.6	75.2
August	75.9	74.8	75.5	70.2	75.0	73.1	75.2	72.6	75.6	79.0	73.0	70.4	72.3	70.0	72.9	73.3	71.1
September.	66.7	63.8	68.6	63.1	64.4	66.3	67.0	61.7	64.2	73.5	65.5	63.2	71.6	63.9	66.6	65.8	60.9
October	53.3	49.8	55.0	50.8	51.1	58.2	54.0	62.3	52.9	60.2	58.8	54.8	58.3	50.4	55.3	50.2	48.5
November	35.3	37.0	42.1	39.9	41.1	42.6	44.9	45.4	31.2	42.8	43.3	45.0	41.5	41.9	39.3	40.5	42.4
December	23.8	37.2	35.3	41.2	22.6	46.3	26.9	35.6	24.2	40.2	30.4	34.4	29.9	32.0	25.2	30.8	34.0

TOTAL PRECIPITATION, IN INCHES AND HUNDREDTHS.

January.	1.17	4.50	3.75	1.01	5.94	1.56	2.38	1.47	6.32	2.10	3.74	1.32	1.05	3.31	4.02	1.48	2.81
February	1.41	2.85	4.17	1.88	4.49	1.21	2.10	2.17	3.16	6.43	7.28	7.19	4.73	1.54	1.51	4.61	1.45
March	1.31	3.90	5.79	5.23	7.44	5.23	1.23	3.36	4.03	4.01	6.11	3.25	3.01	0.82	2.85	2.78	4.26
April	3.26	5.91	4.44	1.29	2.27	3.11	5.51	2.25	6.43	2.60	3.68	2.73	2.89	5.28	3.09	3.92	4.06
May	3.22	3.89	4.03	5.13	5.11	2.09	3.24	3.38	8.22	3.78	7.65	4.02	4.80	3.66	3.82	2.39	4.73
June.	3.28	3.70	5.25	12.20	7.54	6.21	2.25	2.94	8.48	3.92	9.35	4.59	4.11	5.74	4.92	2.45	2.65
July.	11.00	11.28	3.53	13.12	7.48	4.19	4.54	2.40	2.26	0.82	3.43	6.12	6.03	1.43	2.27	1.41	3.33
August	2.69	1.32	2.90	3.66	5.86	4.13	2.42	5.71	2.67	0.97	4.51	2.48	0.46	5.82	6.70	3.15	5.84
September.	2.81	1.76	2.09	1.34	3.85	2.04	3.35	6.94	1.86	3.25	0.72	2.72	3.09	3.50	3.43	2.11	1.23
October	1.07	5.27	0.36	2.67	4.42	3.32	4.78	1.34	3.54	6.11	2.18	8.56	2.31	3.25	1.20	0.55	4.03
November	0.80	2.55	4.82	3.04	2.26	3.64	2.87	5.82	2.58	9.35	2.50	6.80	1.46	2.71	3.87	3.71	5.07
December	2.10	5.90	2.79	4.01	0.90	2.45	3.95	5.10	1.44	5.40	2.53	4.34	6.05	2.45	2.20	4.52	1.91

INTRODUCTORY.

The table of contents on preceding page is our preface, and the index on the last pages the key to the contents, to which we invite criticism and suggestions as to wherein improvement may be effected. Condensation is a feature in this report which we trust will meet with approval, and place this volume under the head of progression. We feel sure that the matter under the head of statistics will attract attention and prove valuable for reference, also showing our State "high in the rank," and no deterioration in fertility of the soil, but give promise that "these rich fields will produce corn so long as the sun continues to pour forth milk into the berry and gild the kernel with its light."

The recent encouragement by the Legislature to farmers' institute work by liberal appropriations has given an impetus to agricultural industry and literature that promises good results.

Too much praise can not be said in regard to the several branches of the Board of Agriculture known as the State Industrial Associations, including the State Horticultural Society. The proceedings are found herein, embracing discussions or treatise on almost every subject connected with successful farming, and no progressive farmer can afford to be without a copy. But, alas! how are we going to divide 5,000 copies among 200,000 farmers? Echo answers, "How?" These reports are printed by the State printer at the expense of the State, and intended as books of reference for public libraries.

The Board of Agriculture are favored with four rooms on the first floor of the new State House; a lecture room, committee room, office and display room—the first rooms to the right at east entrance. The display room, No. 15, is always open during business hours. Visitors are welcome.

SECRETARY.

TEN YEARS' REVIEW OF INDIANA CROPS.

We take occasion in this annual report to furnish a carefully prepared comparative statement of all the principal crops of the State for the past ten (10) years, that the agriculturists of the country may examine for themselves the figures, and obtain an idea of the progress and growth of farming operations in Indiana from year to year during that time. From these tables, which are as accurate as can possibly be obtained under the present laws of the State for the gathering and compilation of statistics, we are able to present the following conclusions, viz.: That Indiana, unlike many States west of the Mississippi River, rarely if *ever* has two successive failures, or even partial failures, of any crop adapted to the soil and climate of the State, while, as a matter of *fact*, Indiana contains the most variegated soil and natural resources of any State in the Union, raising successfully a greater variety of the cereals, fruits and vegetables than any other State with probably the bare exception of Ohio.

The rule in Indiana seems to be that if we have a poor crop one year of any one cereal the same character of grain will the succeeding year be excessive, thus from year to year the crops *even up*, and, on the whole, a very high average is reached for every crop produced in the State. This fact as laid down can not be controverted, as an examination of the figures for the past ten (10) years show conclusively. Take for instance the corn crop for 1887. It was the smallest in ten years, while in 1888 the same crop was unprecedentedly large. In 1887 the crop of wheat was immense, the largest of any State in the Union, while the following year, 1888, wheat was but an indifferent yield as compared with the year previous; and still it was fair, ranking far ahead of what is termed a failure. Taking all

things into consideration we can only say to the native Indian who is engaged in farming operations and for some reason has become dissatisfied with his present surroundings, and has in contemplation removal to some "fairy land" west of the Mississippi that is represented as "flowing with milk and honey," our advice is *don't go*.

CORN.

This crop was a remarkable one, being the largest in point of production, and also the largest average number of bushels to the acre in the history of the State. By reference to table it will be observed that during the past ten years, there was no year that compared with the crop of 1888.

The years 1882 and 1885, came nearer approximating the immense yield of 1888, still they fell nearly 13,000,000 bushels short, with a loss to the acre of nearly two (2) bushels the State over.

The crop was one of which the State should be proud, as it demonstrates conclusively that improved farming is the rule in Indiana, and under proper weather conditions, that the soil of the State is "all right," and equal to any emergency. That it is being improved yearly is apparent on the "face of the returns," and refutes the statements of certain scientific gentlemen that the crop production in Indiana is decreasing to an "alarming extent," on account of soil deterioration. The farmers of Indiana are improving their farms yearly by rotation of crops, turning under clover and the use of fertilizers. The corn crop of 1888 was almost double that of 1887, while the average to the acre was 15.9 bushels in excess of 1887. (The last named year will be known in the history of the State as the year of the great drought.)

We have the largest production of corn in ten years, immediately following and in the wake of the smallest corn production in the same time. Thus it will be seen that in Indiana crops *even up* from year to year, and that the result is a very high average for the time, ten years.

Tippecanoe County produced the most corn in 1888, 8,965,329 bushels, as against Randolph in 1887, which produced but 1,810,741 bushels, or not half the amount.

Cass produced the highest average number bushels to the acre, 55, as against Clay in 1887, which was the highest producing only 38 bushels per acre, showing an increase here of 17 bushels in 1888. Benton produced the unequalled amount of 8,558 bushels to the square mile, as against 4,363 last year. She produced the most to the square mile in both years.

WHEAT.

Precisely the opposite conditions befell the wheat crop in 1888, when only 28,750,764 bushels were produced, the least quantity in ten years, with about the same acreage as in former years. The average per acre, 10.5 bushels, was the smallest in ten years with the exception of 1881 and 1883. The weather was not at all favorable for successful wheat culture, for the following reasons, viz.: Lack of moisture at seeding time in consequence of the drought of 1887, as in October of that year, according to the meteorological observations, there was the least precipitation of any one month on record. Then again during the winter there were ten or twelve days in succession when the thermometer indicated ten to twenty degrees below zero, with much ice and sleet on the ground, with no snow for protection, killing the roots. Gibson County produced the most wheat, 1,235,590 bushels; also the most to the square mile, 2,617 bushels; Floyd County the most to the acre, 23 bushels.

OATS.

Indiana produced more oats in 1888 (27,493,851 bushels) than any previous year in ten except 1886. Benton County led the State in the amount produced (1,565,042), with an average of 42.5 bushels to the acre; second only to Elkhart, which produced 45 bushels to the acre. Benton produced the most to

the square mile, 4,140 bushels, being 2,514 bushels more to the square mile than any other county in the State, or a great deal more than double. This county has taken a firm hold as a leading county in the production of corn, oats and some other grains, and retains it from year to year with a vise-like grip, which is highly complimentary to the industry of her people, and speaks volumes for the richness of her soil.

TIMOTHY AND CLOVER HAY.

Of timothy 5,330 tons more hay was produced in 1888 than the year previous, with 32,453 less acreage. Lake County produced the most timothy, 42,915 tons, also the most to the square mile. Of clover hay the reverse was true, as the smallest crop was harvested in six years, 1,311,450 tons, on a total acreage of 1,061,846. Randolph leads the State with 40,962 tons. While Howard produced the most to the acre, two (2) tons.

Of clover seed, 295,505 bushels was threshed, the most in five years. Of timothy but 41,881 bushels, the least in five years, with the bare exception of 1884. Noble leads in clover seed, 11,820 bushels, and Allen in production of timothy seed, 4,107 bushels.

BLUE AND OTHER NATIVE GRASSES.

There was no material change in the number of acres in blue and other native grasses from 1887.

BARLEY.

Of barley, 403,575 bushels were produced, (the most in six years) on an average acreage. Dearborn County leads the State with 59,985, producing 31 bushels to the acre, and 206 bushels to the square mile.

RYE.

Of rye, 545,425 bushels were produced, the most for six years, with the best average number of bushels to the acre, 15.3. Allen County leads with 60,640 bushels, averaging 32 bushels to the acre, and 90 bushels to the square mile. Switzerland County averaged 188 bushels to the square mile.

BUCKWHEAT.

The largest yield in five years, 91,406 bushels, (except 1886) with an average of 13.6 bushels to the acre. Lake produced the most, 13,699 bushels, and Kosciusko the largest yield per acre, 22 bushels.

TOBACCO.

The crop of 1888 was among the largest ever produced in the State, and the average to the acre was the greatest, 906.9 pounds, while as in the case of corn, the preceding year, 1887, was the smallest, both in acreage, amount produced and average bushels to the acre, only 478.6 pounds.

IRISH POTATOES.

The same was true of potatoes as of corn, barley, rye, buckwheat and tobacco, a large yield, 5,480,960 bushels, with an average of 71.9 bushels to the acre the State over, while in 1887, only 2,216,130 bushels, with the insignificant average of but 28.6 bushels to the acre, were produced. Marion County leads with 244,125 bushels, while Wabash produced the most to the acre, 150 bushels.

CORN.

COMPARATIVE YIELD.

<i>Year.</i>	<i>Bushels.</i>	<i>Acres.</i>	<i>Average Bushels per Acre.</i>
1888	128,436,284	3,419,377	37.5
1887	70,017,604	3,239,914	21.6
1886	108,217,209	3,229,445	33.5
1885	115,433,914	3,216,997	35.8
1884	89,159,799	3,137,840	28.4
1883	89,699,237	3,125,376	28.7
1882	115,699,797	3,312,683	34.9
1881	71,387,075	3,135,178	22.7
1880	87,335,014	3,130,327	28.1
1879	89,571,535	3,577,808	25.0

The principal corn producing counties of the State, 1888 :

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bushels per Acre.</i>
Tippecanoe	3,965,329	48.
Benton	3,305,289	39.
Shelby	3,067,905	51.
Knox.	2,902,553	53.8
Rush	2,847,390	49.
Madison	2,753,777	47.
Randolph.	2,615,437	43.5
Boone	2,555,061	47.
Henry	2,514,480	48.
Wayne	2,474,190	45.

Counties producing the largest average number of bushels per acre, 1888 :

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bushels per Acre.</i>
Cass	2,263,910	55.
Knox.	2,902,553	53.8
Dearborn	1,081,764	52.5
Shelby	3,067,905	51.
Johnson	2,228,868	50.5
Tipton	1,673,250	50.
Rush	2,847,390	49.
Tippecanoe	3,965,329	48.
Henry	2,514,480	48.
Hancock	1,969,680	48.

Counties in the State having the largest production of corn according to size, 1888:

<i>County.</i>	<i>Area Sq. Miles.</i>	<i>Total Production.</i>	<i>Average Bushels per Sq. Mile.</i>
Benton	378	3,305,209	8,558
Tippecanoe	504	3,965,328	7,867
Shelby.	468	3,067,905	7,519
Johnson	312	2,228,868	7,143
Rush	414	2,847,390	6,877
Wayne	394	2,474,190	6,305
Henry	400	2,514,480	6,286
Howard	295	1,825,567	6,188
Madison.	450	2,753,777	6,119
Boone.	420	2,555,061	6,083

THE YEAR 1887.

The principal corn-producing counties of the State for the year 1887:

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bushels Per Acre.</i>
Randolph	1,810,741	31
Benton	1,649,422	23
Clinton	1,500,390	27
Wabash.	1,414,778	31
Grant	1,378,300	28

Counties producing the largest average number of bushels per acre, 1887:

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bushels Per Acre.</i>
Clay	1,004,886	38.
Whitley.	866,355	35.
Kosciusko.	1,322,145	33.
Adams	983,351	32.5
Miami	1,353,632	32.

Counties in the State having the largest production of corn, according to size, 1887:

<i>County.</i>	<i>Area Square Miles.</i>	<i>Total Production.</i>	<i>Average Bu. Per Sq. Mile.</i>
Benton	378	1,649,422	4,363
Tipton	260	1,072,590	4,125
Randolph.	444	1,810,741	4,078
Howard	295	1,145,760	3,884
Clinton.	408	1,500,390	3,677

WHEAT.

COMPARATIVE YIELD.

<i>Year.</i>	<i>Bushels.</i>	<i>Acres.</i>	<i>Average Bushels Per Acre.</i>
1888	28,750,764	2,726,111	10.5
1887	39,096,657	2,794,196	13.9
1886	43,226,317	2,803,922	15.4
1885	31,640,086	2,732,250	11.5
1884	40,531,200	2,990,811	13.5
1883	31,405,573	3,049,209	10.2
1882	46,928,643	3,063,348	15.3
1881	30,635,668	3,210,547	9.5
1880	47,130,684	3,109,845	15.1
1879	41,236,630	2,422,480	17.

The principal wheat-producing counties of the State, 1888 :

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bushels Per Acre.</i>
Gibson	1,235,520	18.
Posey	1,091,611	18.5
Knox	812,566	17.
Elkhart	788,724	18.
Shelby	731,705	13.
Kosciusko	677,926	17.5
Rush	641,587	13.5
Noble	617,220	16.3
Laporte	609,630	15.
Bartholomew	577,937	14 3

Counties producing the largest average yield per acre, 1888.

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bushels per Acre.</i>
Floyd	148,488	23.
Lake	77,480	20.
Posey	1,091,611	18.5
Gibson	1,235,520	18.
Elkhart	788,724	18.
Vanderburgh	556,542	18.
Dearborn	368,388	18.
Starke	71,370	18.
Kosciusko	677,926	17.5
Jefferson	313,110	17.5

Counties having the largest production of wheat, according to size, 1888:

<i>County.</i>	<i>Area Square Miles.</i>	<i>Bushels Produced.</i>	<i>Average Bu. Per Sq. Mile.</i>
Gibson	472	1,235,520	2,617
Posey.	420	1,091,611	2,599
Vanderburgh	240	556,512	2,318
Shelby	408	731,705	1,792
Elkhart.	472	788,724	1,671
Rush.	414	641,587	1,549
Johnson	312	482,796	1,547
Fayette.	212	320,970	1,514
Knox.	540	812,566	1,504

THE YEAR 1887.

The principal wheat-producing counties of the State, 1887:

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bushels per Acre.</i>
Clinton	1,036,116	18
Montgomery	1,006,290	18
Posey	913,530	15
Gibson.	870,156	12
Shelby.	830,788	14

Counties producing the largest average yield per acre, 1887:

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bushels per Acre.</i>
Clinton	1,036,116	18
Montgomery	1,006,290	18
Huntington	627,984	18
Pulaski	310,806	18
Warren	294,336	18

Counties in the State having the largest production of wheat according to size, 1887:

<i>County.</i>	<i>Area, Square Miles.</i>	<i>Total Production. Bushels.</i>	<i>Average Bu. per Sq. Mile.</i>
Clinton	408	1,036,116	2,539
Posey.	420	913,530	2,175
Howard	295	633,522	2,147
Shelby	408	830,788	2,036
Miami	384	773,710	2,014

OATS.

COMPARATIVE YIELD.

<i>Year.</i>	<i>Bushels.</i>	<i>Acres.</i>	<i>Average Bushels per Acre.</i>
1888	27,493,851	937,143	29.3
1887	24,378,984	886,927	27.7
1886	28,330,102	872,261	32.4
1885	25,228,033	822,934	30.7
1884	23,576,117	791,843	29.7
1883	19,567,789	656,286	29.8
1882	19,615,516	684,822	28.6
1881	14,398,420	580,279	24.8
1880	15,563,430	688,901	22.6
1879	11,804,049	883,492	12.2

The principal oat-producing counties of the State, 1888:

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bushels per Acre.</i>
Benton.	1,565,042	42.5
Allen	1,034,664	38.
Lake	714,884	34.
Elkhart	665,235	45.
LaPorte	649,152	36.
White	630,739	37.
Newton	621,316	34.5
Tippecanoe.	620,176	40.5
Adams.	605,448	36.
DeKalb	512,964	36.

Counties producing the largest average yield per acre, 1888:

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bushels per Acre.</i>
Elkhart	665,235	45.
Benton.	1,565,042	42.5
Jay	396,806	41.
Tippecanoe.	620,176	40.5
Shelby	211,640	40.
Madison	227,760	39.
Allen	1,034,664	38.
Wabash	375,896	38.
Marion	309,875	37.5
White	630,739	37.

Counties having the largest production of oats according to size, 1888 :

<i>County.</i>	<i>Area Square Miles.</i>	<i>Bushels Produced.</i>	<i>Average Bushels Per Acre.</i>
Benton	378	1,565,042	4,140
Newton.	382.5	621,316	1,626
Allen.	670	1,034,664	1,544
Lake.	500	714,884	1,429
Elkhart	472.5	665,235	1,409
Warren.	364	499,422	1,372
White	504	630,739	1,235
Tippecanoe	504	620,175	1,230
Laporte.	540	649,152	1,202
Porter	420	496,698	1,182

THE YEAR 1887.

The principal oat-producing counties of the State for the year 1887 :

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bushels Per Acre.</i>
Benton	923,754	26
Allen.	899,045	35
Lake	747,320	28
Newton.	524,700	30
Elkhart.	486,624	32

Counties producing the largest average yield per acre, 1887 :

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bushels Per Acre.</i>
Wabash.	335,640	40
Hancock	168,440	40
Adams	342,825	37.5
Whitley	359,899	37
Wells.	229,252	37

Counties in the State having the largest production of oats according to size, 1887 :

<i>County.</i>	<i>Area Square Mile.</i>	<i>Bushels Produced.</i>	<i>Average Bu. Per Sq. Mile.</i>
Benton	378	923,754	2,443
Lake	500	747,320	1,494
Newton	382	524,700	1,373
Allen	670	899,045	1,341
Warren	364	467,200	1,283

TIMOTHY HAY.

COMPARATIVE YIELD.

<i>Year.</i>	<i>Tons.</i>	<i>Acres.</i>	<i>Average Tons Per Acre.</i>
1888	1,548,888	1,237,417	1.2
1887	1,543,558	1,269,870	1.2
1886	1,770,528	1,075,717	1.6
1885	1,944,946	1,374,352	1.4
1884	1,946,342	1,247,099	1.5
1883	1,831,137	1,167,323	1.6
1882	1,599,949	984,982	1.6
1881	1,303,217	988,560	1.2
1880	1,221,164	795,438	1.5
1879	912,372	1,116,428	.8

The principal timothy-hay-producing counties, 1888 :

<i>County.</i>	<i>Tons Produced.</i>	<i>Average Tons Per Acre.</i>
Lake	42,915	1.5
Allen	38,668	1.5
Washington	34,278	1.25
Greene	34,202	1.25
Benton	30,871	1.25
Ripley	30,670	1.0
Jasper.	28,977	1.25
Porter.	28,491	1.25
Grant	27,558	1.5
Vigo	27,435	1.5

Counties producing the largest average number tons of timothy hay to the acre in 1888:

<i>County.</i>	<i>Tons Produced.</i>	<i>Average Tons per Acre.</i>
Vermillion.	17,620	2
Lake	42,915	1.5
Allen	38,688	1.5
Grant	27,558	1.5
Vigo	27,435	1.5
Lawrence	27,357	1.5

The general average all over the State was nearly 1.5 tons to the acre, only a few counties failing to reach this amount.

Counties in the State producing the largest amount of timothy hay according to size, in 1888:

<i>County.</i>	<i>Area Square Miles.</i>	<i>Tons Produced.</i>	<i>Average Tons per Square Mile.</i>
Lake	500	42,915	85
Benton	378	30,871	81
Switzerland	221	15,939	72
Ripley	450	30,670	68
Porter	420	28,491	67
Huntington	384	26,001	67
Washington	514	34,278	66
Ohio	90	5,953	66
Greene	540	34,202	65
Grant	418	27,558	65

THE YEAR 1887.

The principal timothy hay producing counties of the State, 1887:

<i>County.</i>	<i>Tons Produced.</i>	<i>Average Tons per Acre.</i>
Allen	35,915	1.5
Lake	31,673	1
Tippecanoe	30,756	1.5
Ripley	30,485	1
Grant	30,395	1.5

Counties producing the largest average number of tons of timothy hay to the acre, 1887:

<i>County.</i>	<i>Tons Produced.</i>	<i>Average Tons per Acre.</i>
Howard	14,560	2
Allen	35,915	1.5
Tippecanoe	30,756	1.5
Grant	30,395	1.5
White	29,220	1.5

Counties in the State producing the largest amount of timothy hay, according to size, 1887:

<i>County.</i>	<i>Area Square Miles.</i>	<i>Tons Produced.</i>	<i>Average Tons per Square Mile.</i>
Wells	372	27,480	73
Grant	418	30,395	72
Jay	377	26,073	69
Ripley	450	30,485	67
Owen	393	26,888	68

CLOVER HAY.

COMPARATIVE YIELD.

<i>Year.</i>	<i>Tons.</i>	<i>Acres.</i>	<i>Average Tons Per Acre.</i>
1888	1,311,450	1,061,846	1.2
1887	1,728,776	1,121,314	1.5
1886	1,770,528	1,075,717	1.6
1885	1,662,277	1,042,759	1.6
1884	1,501,860	908,238	1.6
1883	1,628,519	939,615	1.7

Counties producing the largest amount of clover hay, 1888:

<i>County.</i>	<i>Tons Produced.</i>	<i>Average Tons Per Acre.</i>
Randolph	40,962	1.5
Elkhart	36,555	1.5
Lagrange	34,411	1.5
Kosciusko	34,283	1.5
Gibson	33,646	1.5
Henry	33,499	1.5
Miami	33,165	1.5
Allen	32,484	1.5
Clinton	31,318	1.7
Howard	27,362	2.

The Counties producing the largest average number of tons of clover hay to the acre, 1888, are the same as above, with an addition of the County of Daviess (not included), which ranked second highest, averaging two tons to the acre in a production of 24,584 bushels, while Howard ranked first, averaging two tons in a larger total production 27,362 bushels, Clinton County third, with 1.7 tons, and so on down the list, commencing at Randolph (fourth), and proceeding downward in order to Allen (eleventh).

Counties having the largest production of clover hay according to size, 1888:

<i>County.</i>	<i>Area, Square Miles.</i>	<i>Tons Produced.</i>	<i>Average Tons Per Sq. Mile.</i>
Union	168	17,185	102
Randolph	444	40,952	92
Howard	295	27,362	92
Lagrange	388	34,411	89
Miami	384	33,165	86

THE YEAR 1887.

Counties producing the largest amount of clover hay, 1887

<i>County.</i>	<i>Tons Produced.</i>	<i>Average Tons Per Acre.</i>
Gibson	46,722	2
Randolph	43,880	2
Allen	41,074	2
Hamilton	40,198	2
Elkhart	38,379	1½

The counties producing the largest average number of tons of clover hay to the acre, 1887, are the same as above except Elkhart, which falls below a number of other counties which also produced two (2) tons to the acre.

Counties having the largest production of clover hay according to size, 1887 :

<i>County.</i>	<i>Area, Square Miles.</i>	<i>Total Production. Tons.</i>	<i>Average Tons Per Sq. Mile.</i>
Union	168	18,399	108
Hamilton	400	40,198	100
Gibson	472	46,722	99

CLOVER AND TIMOTHY SEED.

COMPARATIVE YIELD.

<i>Year.</i>	<i>Clover, Bushels.</i>	<i>Timothy, Bushels.</i>
1888	295,505	41,881
1887	261,284	43,515
1886	216,515	45,944
1885	237,279	47,535
1884	246,042	35,452

Counties in the State producing the largest yield of clover and timothy seed 1888:

<i>County.</i>	<i>Bushels Clover.</i>	<i>County.</i>	<i>Bushels Timothy.</i>
Noble	11,820	Allen	4,107
DeKalb	10,834	Bartholomew	2,457
Fulton.	9,575	Greene.	1,941
Lagrange	8,738	Carroll.	1,224
Steuben	8,332	Jay	1,121
Whitley	8,096	Wayne.	1,090
St. Joseph	8,006	Grant	1,074
Gibson.	7,961	Washington	1,056
Wells	6,639	Parke	967
Wabash	6,582	Clay.	933

Counties in the State producing the largest product of clover and timothy seed, 1887 :

<i>County.</i>	<i>Bushels Clover.</i>	<i>County.</i>	<i>Bushels Timothy.</i>
Noble	9,875	Allen	4,145
Fulton.	8,279	Bartholomew	2,651
Adams.	7,693	Greene.	2,217
Whitley	7,583	Carroll	1,675
Lagrange	6,920	Jay	1,295

BLUE AND OTHER NATIVE GRASSES.

The returns for 1888 show about the same amount of land in blue and other native grasses as 1887, when the following comparative table was furnished :

<i>Year.</i>	<i>Acres.</i>
1887	2,099,986
1886	2,044,917
1885	2,147,919

Counties growing the most native grasses during 1887 :

<i>County.</i>	<i>Acres.</i>
Putnam	98,249
Jasper.	96,916
Owen	89,436
Lawrence	73,198
Greene	64,201

BARLEY.

COMPARATIVE YIELD.

<i>Year.</i>	<i>Bushels.</i>	<i>Acres.</i>	<i>Average Bu. Per Acre.</i>
1888	403,515	18,913	21.3
1887	340,663	17,311	18.5
1886	330,078	13,577	24.3
1885	150,531	9,186	16.3
1884	259,106	11,907	22.6
1883	399,183	20,172	14.3

The principal barley-producing counties in the State, 1888 :

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bushels Per Acre.</i>
Dearborn	59,985	31
Franklin.	45,100	25
Shelby.	19,992	21
Marion.	18,125	25
Laporte	15,740	20
Jefferson.	15,200	20
Wayne.	12,222	18
St. Joseph	12,138	17
Spencer	10,450	25
Ohio.	8,092	28

Counties producing the largest yield per acre, 1888 :

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bushels Per Acre.</i>
Dearborn	59,985	31
Ohio.	8,092	28
Franklin.	45,100	25
Marion	18,125	25
Spencer	10,450	25
Randolph	5,025	25
Bartholomew.	4,875	25
Miami.	4,700	25
Huntington	4,650	25
Steuben	7,291	23

Counties producing the largest amount of barley, according to size, 1888 :

<i>County.</i>	<i>Area Square Miles.</i>	<i>Bushels Produced.</i>	<i>Average Bu. Per Sq. Mile.</i>
Dearborn	291	59,985	206
Franklin	400	45,100	112
Ohio	90	8,092	89
Shelby	408	19,992	49
Marion	420	18,125	43
Jefferson	380	15,200	40
Wayne	393	12,222	31
Laporte.	540	15,740	29
St. Joseph.	450	12,138	27
Steuben.	330	7,291	22

THE YEAR 1887.

The principal barley-producing counties of the State for 1887 :

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bu. per Acre.</i>
Franklin.	38,000	19
Dearborn	28,340	13
Marion	22,200	30
Shelby.	18,486	18
Jefferson.	17,920	20

Counties producing the largest yield per acre, 1887 :

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bu. per Acre.</i>
Wells	2,160	40
Noble	1,540	35
Wayne.	14,144	32
Hancock.	5,792	32
Miami.	5,376	32

RYE.

COMPARATIVE YIELD.

<i>Year.</i>	<i>Rye, Bushels.</i>	<i>Acres.</i>	<i>Average Bushels per Acre.</i>
1888	545,425	35,497	15.3
1887	450,750	33,871	13.6
1886	522,321	36,581	14.2
1885	440,597	29,875	14.7
1884	434,266	32,373	13.4
1883	358,513	26,604	13.4

The principal rye-producing counties of the State, 1888 :

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bushels per Acre.</i>
Allen	60,640	32
Porter	28,674	18
Jasper	27,188	14
Pulaski	24,495	15
Switzerland.	23,990	10
Starke	23,744	14
Newton	23,610	15
Marshall	21,735	15
Lake.	19,950	15
Elkhart	19,247	10

Counties producing the largest average number of bushels per acre, 1888 :

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bushels per Acre.</i>
Allen	60,640	32
Huntington	4,796	22
Shelby	1,188	22
Bartholomew	2,121	21
Tippecanoe	11,400	20
Madison	4,960	20
Montgomery	3,260	20
Spencer	3,200	20
Hamilton	3,060	20
Orange	1,880	20

Counties in the State producing the largest amount of rye according to size, 1888 :

<i>County.</i>	<i>Area Square Miles.</i>	<i>Bushels Produced.</i>	<i>Average Bushels Per Sq. Mile.</i>
Switzerland	221	23,990	108
Allen	670	60,640	90
Starke	306	23,744	77
Porter	420	28,674	68
Newton	382	23,160	60
Pulaski	432	24,495	56
Ohio	90	4,680	52
Jasper	550	27,188	49
Marshall	441	21,735	49
Elkhart	472	19,247	40

THE YEAR 1887.

The principal rye-producing counties in the State for the year 1887 :

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bushels per Acre.</i>
Allen	26,819	13
Lake	24,396	19
Pulaski	23,550	15
Switzerland	22,626	9
Jasper	20,262	11

Counties producing the largest average bushels per acre, 1887 :

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bushels per Acre.</i>
Wells	12,012	21
Madison	3,675	21
Miami	2,780	20
Hamilton	1,600	20
Carroll	1,000	20

FLAXSEED.

COMPARATIVE YIELD.

<i>Year.</i>	<i>Bushels.</i>	<i>Acres.</i>	<i>Average Bushels per Acre.</i>
1888	101,693	13,949	7.2
1887	107,208	14,872	7.2
1886	153,128	18,268	8.3
1885	132,181	17,767	7.4
1884	185,227	28,166	6.5
1883	156,181	24,653	6.3

The principal flaxseed-producing counties of the State, 1888:

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bushels per Acre.</i>
Wayne	15,384	8
Huntington	14,532	7
Benton	7,150	10
Wells	6,783	7
Newton	6,489	7
Allen	6,000	10
Grant	5,712	8
Randolph	4,872	6
Adams.	4,340	7
Wabash	3,640	5

Counties in the State producing the largest number of bushels to the acre, 1888:

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bushels Per Acre.</i>
Benton	7,150	10
Allen	6,000	10
Wayne	15,384	8
Grant	5,712	8
Miami	3,320	8
Jay	2,144	8
Laporte	1,024	8
Jasper	720	8
Marion	560	8
Dubois	272	10

THE YEAR 1887.

The principal flax-seed producing counties in the State for 1887 :

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bushels Per Acre.</i>
Wayne	16,254	7
Huntington	15,516	9
Grant	8,200	8
Randolph	7,448	7
Newton	7,250	10

Counties in the State producing the largest number of bushels to the acre, 1887 :

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bushels Per Acre.</i>
Newton	7,250	10
Shelby	160	10
Huntington	15,516	9
Grant	8,200	8
White	2,040	8

BUCKWHEAT.

COMPARATIVE YIELD.

<i>Year.</i>	<i>Bushels.</i>	<i>Acres.</i>	<i>Average Bushels per Acre.</i>
1888	91,406	6,675	13.6
1887	69,375	6,469	10.7
1886	105,734	6,953	15.2
1885	67,848	6,072	11.1
1884	62,251	5,382	11.7

Counties producing the largest quantity of buckwheat, 1888:

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bushels per Acre.</i>
Lake	13,699	19
Newton	6,540	20
Pulaski	4,416	12
Starke	4,356	12
LaPorte.	4,270	14
Kosciusko.	3,322	22
Jasper	3,015	15
Wayne	2,775	15
St. Joseph	2,760	20
Cass	2,750	10

Counties producing the largest quantity of buckwheat to the acre, 1888, are the same as above, ranking in order as follows: Kosciusko, Newton, St. Joseph, Lake, Jasper, Wayne, LaPorte, Pulaski, Starke and Cass.

TOBACCO.

(COMPARATIVE YIELD).

<i>Year.</i>	<i>Pounds.</i>	<i>Acres.</i>	<i>Average Pounds per Acre.</i>
1888	16,403,540	18,086	906.9
1887	3,322,196	7,150	478.6
1886	17,802,470	22,134	804.3
1885	18,404,475	24,386	754.7
1884	15,592,400	20,711	753.3
1883	7,706,110	13,092	588.6
1882	6,533,386	12,291	531.
1881	6,565,677	13,624	481.
1880	8,389,954	13,689	612.
1879	6,801,013	11,413	595.

The principal tobacco-producing counties of the State, 1888 :

<i>County.</i>	<i>Pounds Produced.</i>	<i>Average Pounds per Acre.</i>
Spencer	5,809,100	1,100
Warrick	4,012,650	750
Switzerland	2,328,000	800
Dubois	1,182,650	1,085
Jefferson	907,200	900
Pike	641,600	800
Ohio	348,000	1,300
Dearborn	216,000	1,200
Clark	192,000	1,000
Brown	113,000	800

Counties producing the largest average number of pounds per acre, 1888 :

<i>County.</i>	<i>Pounds Produced.</i>	<i>Average Pounds per Acre.</i>
Ohio	348,000	1,300
Dearborn	216,000	1,200
Spencer	5,809,100	1,100
Dubois	1,182,650	1,085
Clark	192,000	1,100
Crawford	27,000	1,000
Lawrence	7,000	1,000
Jefferson	907,200	900
Gibson	45,000	900
Washington	35,000	900

THE YEAR 1887.

The principal tobacco producing counties of the State for 1887 :

<i>County.</i>	<i>Pounds Produced.</i>	<i>Average Pounds per Acre.</i>
Spencer	984,870	465
Warrick	798,000	500
Switzerland	547,500	500
Dubois.	324,276	443
Jefferson	204,000	500

Counties producing the largest average number of pounds per acre, 1887 :

<i>County.</i>	<i>Pounds Produced.</i>	<i>Average Pounds per Acre.</i>
Wayne.	51,200	800
Wabash	7,200	800
Monroe.	4,550	650
Warrick	798,000	500
Switzerland.	547,500	500

IRISH POTATOES.

COMPARATIVE YIELD.

<i>Year.</i>	<i>Bushels.</i>	<i>Acres.</i>	<i>Average Bushels per Acre.</i>
1888	5,480,960	76,148	71.9
1887	2,216,130	77,306	28.6
1886	5,392,021	72,055	74.8
1885	5,801,524	74,434	77.9
1884	5,969,461	87,484	68.2
1883	8,353,412	87,100	95.9
1882	7,264,830	79,934	90.8
1881	2,396,350	70,814	34
1880	4,148,034	77,936	53.2
1879	4,122,841	85,828	48

The principal Irish potato producing counties, 1888 :

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bushels per Acre.</i>
Marion	244,125	75
Allen	239,025	75
St. Joseph.	186,396	84
Vanderburgh	158,130	90
Lake	153,472	64
Cass	143,920	80
Spencer	137,721	63
Warrick	123,540	58
Fulton	122,496	116
Miami	120,000	96

Counties producing the largest average number of bushels per acre, 1888:

<i>County.</i>	<i>Bushels.</i>	<i>Acres.</i>	<i>Average Bushels per Acre.</i>
Wabash	113,250	755	150
Howard	97,500	780	125
Blackford	59,000	472	125
Fulton	122,496	1,056	116
Jay	100,152	963	104
Greene	78,416	754	104
Madison	35,048	337	104
Delaware	78,280	760	103
Miami	120,000	1,250	96
Fountain	30,400	320	95

THE YEAR 1888.

The principal potato-producing counties of the State for 1887 :

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bushels per Acre.</i>
Lake	134,300	50
Allen	100,504	34
Switzerland.	74,269	29
Vanderburgh	72,960	40
Marion.	70,350	21

Counties producing the largest average number of bushels per acre, 1887 :

<i>County.</i>	<i>Bushels.</i>	<i>Acres.</i>	<i>Average Bushels per Acre.</i>
Monroe	10,530	195	54
Lake	134,300	2,686	50
Fulton	48,115	1,047	43.9
Grant	37,632	896	42
Adams.	27,498	647	42

SWEET POTATOES.

COMPARATIVE YIELD.

<i>Year.</i>	<i>Bushels.</i>	<i>Acres.</i>	<i>Average Bushels per Acre.</i>
1888	234,832	3,272	71.7
1887	167,387	3,214	52.0
1886	222,390	3,003	74.0
1885	183,928	2,552	72.0
1884	142,429	2,509	56.7
1883	168,876	2,208	73.8
1882	696,245	10,506	66.2
1881	239,511	6,073	39.4
1880	406,306	5,581	72.8

The principal sweet-potato producing counties of the State, 1888:

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bushels per Acre.</i>
Marion	41,131	92.4
Warrick	18,300	50.
Vigo	12,460	70.
Spencer	8,160	85.
Gibson	8,051	97.
Wayne	7,412	68.
Henry	6,936	102.
Knox	5,440	85.
Vanderburgh	5,100	100.
Floyd	3,360	70.

Counties producing the largest average number of bushels per acre, 1888:

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bushels per Acre.</i>
Jay	2,750	125
Montgomery	1,352	104
Henry	6,936	102
Huntington	1,938	102
Vanderburgh	5,100	100
Wabash	2,900	100
Union	2,000	100
Tipton	1,800	100
Marshall	1,500	100
Gibson	8,051	97

THE YEAR 1887.

The principal sweet-potato producing county for the year 1887 :

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bushels per Acre.</i>
Warrick	25,545	65
Marion	23,400	52
Vigo	11,662	49
Wayne	11,040	92
Henry	8,510	115

Counties producing the largest average number of bushels per acre, 1887 :

<i>County.</i>	<i>Bushels Produced.</i>	<i>Average Bushels per Acre.</i>
Henry	8,510	115
Tipton	2,310	110
Miami	2,500	100
Jay	2,300	100
Wayne	11,040	92

Buckwheat produced, bushels	91,406	68,000	92,000	63,004	80,000	70,784	88,480	79,000	108,110	160,000
Buckwheat, average yield per acre, bushels		8.2	10.5	11.	9.3	8.6	11.2	11.	13.5	20.0
Buckwheat, number of acres	6,675	8,312	8,749	5,780	8,588	8,158	7,920	7,300	7,880	8,000
Buckwheat, value per bushel		\$0.67	\$0.58	\$0.65	\$0.67	\$0.90	\$0.77	\$0.90	\$0.78	\$0.70
Buckwheat, total valuation	\$59,413	\$45,560	\$53,380	\$40,952	\$53,600	\$83,708	\$68,130	\$78,210	\$82,766	\$112,000
Potatoes produced, bushels*	5,480,960	3,169,000	6,779,000	5,801,524	7,015,000	8,353,412	7,227,080	2,961,910	3,469,260	4,080,000
Potatoes, average yield per acre, bushels		33.	72.	78.	76.	95.9	80.6	35.	59.	68.
Potatoes, number of acres	70,148	96,034	94,151	74,434	92,305	87,100	89,704	84,626	58,800	60,000
Potatoes, value per bushel		\$0.95	\$0.28	\$0.36	\$0.35	\$0.50	\$0.50	\$1.06	\$0.59	\$0.41
Potatoes, total valuation	\$2,740,480	\$3,010,550	\$2,578,020	\$2,088,548	\$2,455,250	\$4,176,701	\$3,613,520	\$3,139,626	\$2,046,228	\$1,672,800
Tobacco produced, pounds*	16,403,540	3,718,000	14,880,000	18,404,475	9,318,000	7,706,110	9,108,860	7,719,373	7,609,080	6,644,400
Tobacco, average yield per acre, pounds		440.	60.	750.	727	588.	308.	717.	715.	8.40
Tobacco, number of acres	18,066	8,450	22,545	24,386	12,812	13,092	11,236	10,760	10,642	7,910
Tobacco, value per pound		\$0.75	\$0.08	\$0.08	\$0.08	\$0.07	\$0.07	\$0.07	\$0.05	\$0.05
Tobacco, total valuation	\$1,312,283	\$185,900	\$992,800	\$1,104,268	\$834,306	\$539,428	\$637,620	\$578,952	\$380,451	\$332,220
Hay produced, tons*	2,880,339	2,591,600	3,100,000	3,610,606	2,016,000	1,881,137	1,649,633	1,374,684	1,461,760	1,411,200
Hay, average yield per acre, tons		1.1	1.25	1.40	1.40	1.56	1.31	1.20	1.48	1.21
Hay, number of acres	2,299,263	2,356,000	2,480,000	2,490,056	1,440,000	1,167,323	1,260,136	1,145,578	1,031,189	1,166,281
Hay, value per ton		\$10.47	\$6.50	\$7.79	\$7.30	\$0.09	\$0.09	\$12.20	\$10.30	\$9.84
Hay, total valuation	\$35,640,456	\$27,134,052	\$20,150,000	\$23,126,620	\$14,716,800	\$16,480,233	\$14,846,697	\$16,771,267	\$15,282,128	\$13,866,206
Acres cultivated, total	9,537,213	9,837,757	10,140,080	9,317,493	8,644,788	8,511,135	8,314,682	8,531,264	8,137,830	8,027,791
Valuation, total	\$118,888,792	\$99,945,902	\$98,927,310	\$99,693,009	\$82,337,576	\$94,657,199	\$113,761,371	\$115,397,704	\$112,462,533	\$117,732,242

* The 1888 crops and the crop of potatoes, tobacco and hay for 1883 are taken from Indiana Report Bureau of Statistics.

LIVE STOCK.

The live stock interest of Indiana has made rapid strides within the past ten years, both as to the number of animals produced of the different species of the domesticated brute creation, as well as in the wonderful advancement in the quality of stock raised.

The farmers of the State are alive to the importance of superior breeding in all classes of stock, and are realizing what has been substantially proven and well-known to the progressive farmers of Europe for a decade; that is, that a well-bred animal will always bring much more in the market than a "scrub," and that it *does not pay* in this advanced state of civilization to raise the last named animal, no matter how small the outlay in rearing the beast.

In the line of cattle prices have not for many years ranged so low, and it takes the very best quality of grade Shorthorns, Herefords, Polls and other recognized beef breeds to reach the top of the market, which at its best has not been entirely satisfactory to cattle producers engaged in supplying our home market the past year. For this reason, if no other, the farmer can not afford to raise "scrub" cattle, and it is a self-evident fact, fully demonstrated by the very marked increase in the quality of stock marketed that the intelligent farmer of Indiana has not been slow to see the benefits accruing from feeding only *first-class stock*. That he has by purchasing only well-bred animals (the prices of which have reached a figure so reasonable as to be within the province of the humblest tiller of the soil) set an example for his less enterprising neighbor, and compelled him to follow in his wake from sheer necessity—for self-protection, as it were, when he found that the stock reared by him was being slowly but surely driven out of our markets.

DISEASE AND DEATH.

A comparison of the years 1887 and 1888, in the relation of the death of domestic animals from all causes in the State presents a remarkably encouraging showing in favor of the year just closed (1888). By reference to the table following it will be seen that there has been a large decrease in the death rate of all domestic animals, with the bare exception of mules, of which only a limited number are raised (60,185) as compared with our other vast live stock interests.

	<i>Died '88.</i>	<i>Died '87</i>	<i>Decrease in '88.</i>
Hogs	326,359	512,692	186,333
Horses	16,004	16,727	723
Cattle	24,758	29,075	4,317
Sheep killed by dogs etc	28,850	31,800	2,950

The above figures speak for themselves and tell of advancement in the sanitary condition of the farms of Indiana. This is a new question in the State and has been under discussion by our people for but a few years; only since it became evident that hog cholera, pleuro-pneumonia, glanders and kindred diseases were infecting the live stock of the country and threatening great loss and destruction unless checked immediately. The figures show, that work in this direction has been steadily progressing, and that although no cure has yet been found, that a preventative is at hand in careful breeding, handling, treatment and farm sanitation, the same as is in vogue in cities and towns for the protection of the lives of their citizens. In this connection a law has been enacted and is now in force, providing for a sanitary live stock commission, which if properly administered, (and we have no reason to doubt that it will be, from the high character of the men selected for this important duty), will further reduce the death rate of animals in the State.

CATTLE.

The increase of cattle has been marked, and has kept pace with other products of the State, there being a steady increase from year to year since 1881. The increase over 1887, was 57,240 head being much greater than that of '87 over '86. In regard to the home market, prices have not been entirely satisfactory, caused, it is alleged, by the shipment into the State of dressed beef by Western packers. A recent enactment by the Legislature requiring inspection "on the hoof" will remedy this evil, if an evil it is, and at the same time guarantee to consumers a good quality of meat, and protect them against unprincipled butchers who slaughter diseased animals.

Allen County leads with 26,869 head, while Hendricks scores the greatest number to the square mile of territory, (55 head).

HOGS.

The devastating effects of so-called hog cholera has retarded the production of this class of live stock in the State, farmers being slow to increase the number of hogs on their farms, being fearful of the ravages of this dread disease; in consequence there has been a material decrease in the number produced during 1888, amounting in the aggregate to 138,850 head. The high price of hogs, and the abatement of cholera, as shown by the large decrease in the death rate the past year, one-third less, has given this industry an impetus, which will no doubt show perceptibly, when the crop of 1889 is reported.

Montgomery County leads the State with 58,140 head, while Rush produced the most to the square mile 118 head.

HORSES AND MULES.

The increase in both horses and mules has kept pace with the increasing population of the State, advancing steadily from year to year as the demands of the people require, while the

quality of the stock has improved far beyond expectations, until now Indiana is a rival of her sister State of Kentucky in the breeding of fine horses. The State of Indiana has as fine a quality of native blue grass as Kentucky, and more of it, which is adopted to the raising of stock of this character. Breeders of fine horses have found this out and the State is dotted all over with as fine stock farms as can be found in any State in the Union. The number of horses reported, 585,707, is 52,450 head in excess of the number reported in 1887, while the number of mules has increased 3,196 in the same period, the ratio of increase being in about the same proportion as of horses. Allen County produced the most horses, 11,896, while Marion had the largest number to the square mile, 24 head. Marion also leads the State in mules with 3,080 head, while Vanderburgh had the most to the square mile, 9.9 head.

SHEEP AND LAMBS.

The number of sheep has diminished somewhat for reasons before stated, viz.: Tariff agitation during the sessions of the last two Congresses, causing an unsettled condition of the wool market. Still the decline has not been as great as was anticipated, and no doubt from present indications this industry will from now on steadily advance to where it was several years ago, when it was carried forward on a large or small scale by almost every farmer in the State.

CATTLE AND HOGS.

<i>Year.</i>	<i>Total No. of Cattle in State.</i>	<i>Total No. of Fatted Hogs in State.</i>
1888	1,360,399	2,057,210
1887	1,303,150	2,196,068
1886	1,251,428	1,761,529
1885	1,183,365	1,698,585
1884	1,112,373	1,967,901
1883	1,057,296	1,911,820
1882	1,110,623	1,655,379
1881	1,054,655	1,775,984
1880	1,065,143	2,003,943
1879	1,017,388	2,626,541

NOTE.—Stock hogs are not included in the above totals.

Counties having the largest number of cattle and hogs, 1888 :

<i>County.</i>	<i>No. Cattle.</i>	<i>County.</i>	<i>No. Hogs.</i>
Allen	26,869	Montgomery	58,140
Randolph	24,672	Rush	49,150
Jasper	22,737	Grant	45,251
Montgomery	22,541	Clinton	44,350
Lawrence	22,201	Hamilton	44,097
Hendricks	21,571	Randolph	42,049
Kosciusko	20,499	Wayne	41,931
Porter	20,499	Boone	41,259
White	20,351	Hendricks	40,199
Noble	20,197	Miami.	37,996

Counties in the State having the largest number of cattle according to area, 1888 :

<i>County.</i>	<i>No. Cattle.</i>	<i>No. to Sq. Mile.</i>
Hendricks	21,571	55
Putnam	24,672	50
Noble	20,197	48
Benton.	18,295	48
Howard	13,459	45
Montgomery	22,541	44
Sullivan	18,666	44
Wabash	18,498	43
White	21,350	42
Hamilton	17,115	42

Counties in the State having the largest number of hogs according to area, 1888 :

<i>County.</i>	<i>No. Hogs.</i>	<i>No. to Sq. Mile.</i>
Rush	49,150	118
Montgomery	58,140	115
Tipton	29,208	112
Hamilton	44,097	110
Grant	45,251	108
Clinton	44,350	108
Wayne.	41,931	106
Hendricks	40,199	103
Miami.	37,996	98
Randolph	42,049	94

THE YEAR 1887.

Counties having the largest number of cattle and hogs, 1887 :

<i>County.</i>	<i>Total No. Cattle.</i>	<i>County.</i>	<i>Total No. Hogs.</i>
Allen	24,230	Montgomery	40,790
Marion	23,215	Hamilton	38,220
Jasper.	22,983	Boone	36,069
Putnam	22,887	Randolph	34,341
Montgomery	22,447	Hendricks	31,909

Counties in the State having the largest number of cattle according to area, 1887 :

<i>County.</i>	<i>No. Cattle.</i>	<i>No. to Sq. Mile.</i>
Marion	23,215	55
Hendricks	21,417	54
Miami.	19,626	51
Benton	19,184	50
Boone	19,660	46

Counties having the largest number of hogs according to area, 1887 :

<i>County.</i>	<i>No. Hogs.</i>	<i>No. to Sq. Mile.</i>
Hamilton	38,220	95
Boone	36,069	85
Hendricks	31,919	81
Montgomery	40,790	80
Grant	30,499	73

HORSES AND MULES.

<i>Year.</i>	<i>Total No. Horses in State.</i>	<i>Total No. Mules in State.</i>
1888	585,707	60,185
1887	533,257	56,989
1886	513,970	57,283
1885	512,394	57,739
1884	510,957	51,318
1883	485,739	47,977

Counties having the largest number of horses and mules, 1888 :

<i>County.</i>	<i>No. Horses.</i>	<i>County.</i>	<i>No. Mules.</i>
Allen	11,896	Marion	3,080
Marion	10,370	Vanderburgh	2,398
Tippecanoe.	10,217	Posey.	2,058
Elkhart	9,997	Warrick	1,725
Boone	9,983	Jackson.	1,718
Montgomery	9,937	Bartholomew	1,547
Hamilton	9,298	Knox.	1,527
Randolph	9,212	Spencer.	1,487
LaPorte	8,927	Gibson	1,459
Clinton	8,911	Daviess.	1,132

Counties in the State having the largest number of horses according to area, 1888 :

<i>County.</i>	<i>No. Horses.</i>	<i>No. to Sq. Mile.</i>
Marion	10,370	24
Boone	9,983	23
Hamilton.	9,298	23
Elkhart	9,997	21
Clinton	8,911	21
Rush	8,864	21
Henry	8,782	21
Johnson	6,625	21
Tippecanoe	10,217	20
Randolph.	9,212	20

Counties in the State having the largest number of mules to the square mile, 1888:

<i>County.</i>	<i>No. Mules.</i>	<i>No. to Sq. Mile.</i>
Vanderburgh	2,398	9.9
Marion	3,080	7.3
Posey	2,058	4.9
Warrick.	1,725	4.4
Jackson.	1,718	3.5
Bartholomew	1,547	3.3
Pike	1,099	3.2
Gibson	1,459	3
Spencer	1,487	2.9
Knox.	1,527	2.8

THE YEAR 1887.

Counties having the largest number of horses and mules, 1887

<i>County.</i>	<i>No. Horses.</i>	<i>County.</i>	<i>No. Mules.</i>
Marion	10,415	Marion	2,600
Elkhart.	10,179	Vanderburgh	2,382
Allen	10,145	Gibson	1,987
Tippecanoe	9,339	Posey.	1,944
Boone.	9,190	Jackson.	1,928

Counties in the State having the largest number of horses according to area, 1887:

<i>County.</i>	<i>No. Horses.</i>	<i>No. to Sq. Mile</i>
Marion	10,415	24
Henry	9,091	22
Elkhart.	10,179	21
Boone	9,190	21
Wayne	8,446	21

Counties in the State having the largest number of mules according to area, 1887:

<i>County.</i>	<i>No. Mules.</i>	<i>No. to Sq. Mile</i>
Vanderburgh	2,382	9.9
Marion.	2,600	6.2
Posey	1,944	4.6
Warrick	1,675	4.3
Gibson	1,987	4.2

SHEEP AND LAMBS.

<i>Year.</i>	<i>Total in State.</i>	<i>Average to Square Mile.</i>
1888	1,266,109	35
1887	1,394,045	38
1886	1,401,612	38
1885	1,295,495	36
1884	1,508,713	42
1883	1,497,362	41

Counties in the State producing the largest number of sheep and lambs, 1888 :

<i>County.</i>	<i>Total Number.</i>	<i>Average to Square Mile.</i>
Elkhart	41,014	86
Lagrange	40,384	104
Steuben	35,422	107
Dekalb	34,269	92
Allen	33,974	50
Owen	32,121	81
Putnam	31,550	64
Greene	28,694	53
Noble	28,354	67
Parke	26,328	59

THE YEAR 1887.

Counties in the State producing the largest number of sheep and lambs, 1887 :

<i>County.</i>	<i>Total Number.</i>	<i>Average to Square Mile.</i>
Elkhart	48,789	103
Lagrange	47,213	121
Steuben.	39,689	120
Owen.	38,835	98
Dekalb	36,088	97

DEATH OF DOMESTIC ANIMALS.

Statement showing the Number of Sheep killed by Dogs, and Death of Cattle, Hogs, Horses and Mules during the Years 1887 and 1888.

COUNTIES.	Number Killed by Dogs in 1888.	Number Killed by Dogs in 1887.	Number Cattle Dying in 1888.	Number Cattle Dying in 1887.	Number of Hogs Dying of Dis- ease, 1888.	Number of Hogs Dying of Dis- ease, 1887.	Number Horses Dying in 1888.	Number Horses Dying in 1887.	Number Mules Dying in 1888.	Number Mules Dying in 1887.
Adams	286	128	250	255	4,513	4,448	130	127	6	1
Allen	401	429	619	496	4,600	14,913	335	501	8	13
Bartholomew	776	1,110	383	653	4,396	4,180	150	420	43	130
Benton	116	89	239	201	2,884	3,880	238	162	5	12
Blackford	227	245	77	68	3,582	4,296	87	134	.	5
Boone	168	167	396	287	9,531	11,156	151	215	2	23
Brown	106	135	86	62	538	469	48	76	12	21
Carroll	284	143	396	297	4,848	10,129	222	162	4	10
Cass	453	217	339	251	3,735	5,786	200	77	4	23
Clark	378	417	383	496	1,920	1,922	123	109	18	15
Clay	145	675	414	584	1,822	1,994	119	191	29	25
Clinton	800	1,090	302	674	3,345	11,126	221	232	1	10
Crawford	80	145	90	61	390	268	223	78	10	23
Davies	231	560	259	370	3,149	4,600	196	180	19	18
Dearborn	169	191	108	146	922	617	138	67	19	11
Decatur	220	211	314	280	3,320	9,567	178	212	17	15
Dekalb	316	235	181	249	1,320	2,451	127	111	.	7
Delaware	509	464	371	460	7,545	14,599	338	329	14	2
Dubois	224	421	320	493	2,691	2,723	105	96	20	7
Elkhart	671	445	94	126	5,102	2,318	92	78	7	7
Fayette	189	207	85	152	2,919	7,642	155	132	5	10
Floyd	60	29	70	86	125	191	45	39	15	9
Fountain	707	803	278	305	3,570	11,967	148	198	10	35
Franklin	400	608	275	779	5,387	9,201	195	227	21	26
Fulton	517	319	310	292	4,231	6,926	165	125	5	7

DEATH OF DOMESTIC ANIMALS—Continued.

BOARD OF AGRICULTURE.

COUNTIES.	Number Killed by Dogs in 1888.	Number Killed by Dogs in 1887.	Number Cattle Dying in 1888.	Number Cattle Dying in 1887.	Number of Hogs Dying, 1888.	Number of Hogs Dying, 1887.	Number Horses Dying in 1888.	Number Horses Dying in 1887.	Number Mules Dying in 1888.	Number Mules Dying in 1887.
Gibson	873	1,019	320	475	10,057	10,471	201	175	97	27
Grant	299	129	382	398	8,456	18,518	248	233	11	16
Greene	923	986	513	434	2,530	4,738	190	221	20	26
Hamilton	441	269	260	279	4,820	11,177	202	207	9	17
Hancock	233	174	240	297	3,386	11,549	321	324	.	12
Harrison	451	419	205	222	1,453	1,633	261	164	.	12
Hendricks	868	428	281	271	4,598	10,354	208	161	10	13
Henry	166	423	284	502	8,570	10,527	300	292	30	31
Howard	140	163	309	337	6,871	9,240	182	138	3	12
Huntington	198	998	315	423	6,385	12,698	247	265	12	15
Jackson	436	381	278	251	2,682	6,347	124	103	85	21
Jasper	80	71	516	497	677	862	198	199	4	13
Jay	307	194	303	345	3,592	2,835	102	273	4	6
Jefferson	129	131	67	117	684	684	54	55	2	23
Jennings	176	72	271	247	1,136	1,684	162	124	7	18
Johnson	296	194	285	270	3,695	10,096	178	258	8	32
Knox	551	466	372	634	9,611	10,126	279	285	27	33
Kosciusko	282	481	377	270	2,679	436	127	124	10	10
Lagrange	143	154	164	180	1,017	896	125	98	1	5
Lake	64	111	276	264	713	706	180	125	4	15
Laporte	94	258	375	619	4,811	11,688	321	271	3	8
Lawrence	277	550	223	262	1,798	1,969	159	90	12	10
Madison	264	324	202	285	5,371	10,789	225	218	11	6
Marion	283	275	310	510	7,540	8,710	375	425	.	60
Marshall	478	224	307	360	4,458	3,636	171	149	5	10
Martin	239	599	183	242	1,996	940	108	88	18	13
Miami	158	123	238	494	9,973	17,619	224	201	5	7
Monroe	268	835	157	184	930	755	90	88	6	28
Montgomery	370	706	309	498	11,950	15,195	398	355	15	17
Morgan	185	205	238	281	2,332	7,547	193	173	18	12

DEATH OF DOMESTIC ANIMALS.

Newton	287	10	302	385	375	576	143	159	4	10
Noble	175	104	224	174	2,804	2,061	154	247	1	10
Ohio	84	143	51	40	118	144	21	14	2	11
Orange	290	378	195	244	1,649	904	153	106	10	14
Owen	482	404	308	312	2,099	2,231	41	145	8	25
Parke	309	243	205	303	2,483	9,003	197	182	13	21
Perry	197	356	232	243	1,404	822	125	175	15	13
Pike	482	856	312	250	3,124	3,672	174	140	17	21
Porter	253	487	211	197	519	530	87	89	2	11
Posey	197	413	200	259	3,502	5,170	121	141	27	23
Pulaski	482	109	216	523	512	1,013	146	253	5	14
Putnam	380	526	351	359	3,762	3,394	205	219	12	26
Randolph	203	231	356	466	7,510	10,190	281	264	9	11
Ripley	156	248	210	232	669	658	384	123	13	13
Rush	199	204	290	273	7,450	17,053	340	356	.	13
Scott	207	318	126	125	316	462	57	61	8	23
Shelby	235	164	397	441	3,748	8,295	330	234	11	10
Spencer	212	205	274	340	1,687	1,489	194	174	22	20
Starke	106	116	285	179	944	464	64	.	3	11
Steuben	132	177	94	126	709	599	99	.	1	3
St. Joseph	433	162	265	376	3,592	5,645	215	291	2	12
Sullivan	638	451	361	442	4,670	5,698	275	175	3	10
Switzerland	246	163	72	76	235	317	102	55	7	16
Tippecanoe	345	146	389	427	4,302	5,555	315	450	10	46
Tipton	432	859	250	379	2,806	5,451	187	173	5	21
Union	166	279	84	96	3,859	5,995	45	64	3	4
Vanderburgh	257	377	171	142	1,362	1,384	112	124	54	38
Vermillion	186	154	207	183	1,893	4,948	158	109	8	18
Vigo	423	122	344	341	2,491	4,576	298	254	13	15
Wabash	827	318	373	466	7,152	8,857	243	232	2	23
Warren	199	147	377	238	3,440	5,188	179	299	4	16
Warrick	501	416	281	479	1,874	3,209	124	199	23	26
Washington	432	373	214	178	953	1,649	80	73	13	13
Wayne	538	640	338	373	10,801	11,479	267	275	5	15
Well	484	227	250	242	6,141	6,462	168	186	4	12
White	136	273	379	334	1,517	2,838	204	220	9	13
Whitley	444	156	335	241	2,751	2,778	134	165	2	6
Total	28,850	31,800	24,758	29,075	326,359	512,692	16,004	16,727	1,084	1,600

THE DAIRY.

The dairy interest of the State presents a formidable showing, and is an immense source of revenue to the people of Indiana. Its growth has been remarkable within the past ten years, gaining steadily until it has reached a place among the products that is not generally known or accredited to it by the people. Well authenticated figures now place it in the position of a rival of, or excelling every other interest in the agricultural field, with the bare exceptions of corn and wheat, as a source of revenue.

The revenue derived from dairy products equals that derived from the hog product, and was in excess of it in 1885, 1886, 1887 and 1888, while it more than doubles the large revenue from the beef product (slaughtered animals), during these years. We present the figures:

	<i>Value, 1885.</i>	<i>Value, 1886.</i>	<i>Value, 1887.</i>	<i>Value, 1888.</i>
Dairy product	\$18,261,940	\$17,801,235	\$23,428,766	\$21,335,707
Hog product.	16,985,850	17,615,290	21,960,600	20,572,100
Beef slaughtered.	6,734,779	6,843,817	8,988,510	10,823,850

Large dairies and creameries are springing up on every hand within a few years, employing many men and women engaged in feeding, milking and in the manufacture of butter and cheese. (Especially is this true in Northern Indiana and in the immediate vicinity of the larger cities and towns.)

The statistics following do not show the large amount of butter and milk consumed at the farmer's home, nor at the homes of families in cities and towns having a cow or cows to provide these commodities.

The introduction of Jerseys and Holsteins in the State of late years has given to this industry an impetus which is being felt far and wide, and has resulted very beneficially in raising the quality of milk stock, and at the same time increasing the

production of milk for a corresponding amount of feed, as is furnished ordinary old time milkers, not bred especially for milk and butter. The milk product of 1888, aggregated 143,-238,050 gallons; butter, 31,231,415 pounds, and cheese, 482,745 pounds.

Marion County produced the most milk and butter, owing, of course, to the number of people to be supplied in the city of Indianapolis. Adams County produced the most cheese, 142,-857 pounds, this being nearly one-third of the State's entire product as reported.

MILK, BUTTER AND CHEESE.

COMPARATIVE YIELD.

<i>Year.</i>	<i>Milk, Gallons.</i>	<i>Butter, Pounds.</i>	<i>Cheese, Pounds.</i>
1888	143,238,050	31,231,415	482,745
1887	156,191,778	33,482,802	621,284
1886	154,182,493	33,133,140	601,815
1885	150,576,993	31,322,617	479,868
1884	152,415,443	34,551,428	690,754
1883	130,303,785	29,591,845	912,746

Counties in the State producing the largest quantity of milk, butter and cheese, 1888:

<i>County.</i>	<i>Milk, Gallons.</i>	<i>County.</i>	<i>Butter, Pounds.</i>	<i>County.</i>	<i>Cheese, Pounds.</i>
Marion	4,497,525	Marion	710,480	Adams.	142,857
Allen	3,663 266	Allen	705,352	Porter.	82,250
Porter.	2,965,558	Marshall.	584,265	Lake	39,819
Noble.	2,704,693	Clinton	582,010	Clark	21,715
Randolph	2,704,692	St. Joseph	575,308	Dekalb	18,556
Delaware	2,626,253	Elkhart	573,663	Miami.	12,411
Lake	2,610,934	Noble	548,053	Kosciusko	11,948
Marshall	2,558,840	Lagrange	532,020	Wells	11,296
Henry.	2,516,615	Wayne	526,671	Ripley.	11,263
Kosciusko	2,501,885	Lake	515,484	Greene.	9,715

Counties producing the most milk according to size, 1888:

<i>County.</i>	<i>Square Miles.</i>	<i>Gallons.</i>	<i>Average No. Gals. per Square Mile.</i>
Marion	420	4,497,525	10,708
Porter	420	2,965,558	7,060
Delaware	399	2,626,253	6,582
Noble	420	2,704,693	6,439
Hancock	307	1,939,041	6,316
Henry	400	2,516,615	6,291
Wayne	393	2,395,740	6,096
Randolph.	444	2,704,692	6,091

Counties producing the most butter according to size, 1888 :

<i>County.</i>	<i>Sqr. Miles.</i>	<i>Pounds.</i>	<i>Average No. of Lbs. per Sq. Mile.</i>
Marion	420	710,480	1,691
Hancock	307	459,256	1,495
Clinton	408	582,010	1,426
Lagrange	388	532,020	1,422
Steuben	330	461,839	1,399
Dearborn	291	406,635	1,397
Marshall	441	584,265	1,324
St. Joseph.	450	575,308	1,278

Counties producing the most cheese, according to size, 1888 :

<i>County.</i>	<i>Sqr. Miles.</i>	<i>Pounds.</i>	<i>Average No. of Lbs. per Sq. Mile.</i>
Adams	360	142,857	396
Porter.	420	82,250	198
Lake	500	39,819	79
Clark	367	21,715	59
Dekalb.	370	18,556	50

THE YEAR 1887.

Counties in the State producing the largest amount of milk, butter and cheese, 1887 :

<i>County.</i>	<i>Gallons Milk.</i>	<i>County.</i>	<i>Butter, Pounds.</i>
Allen	4,528,513	Randolph	797,428
Marion.	4,525,975	Allen	765,535
Porter	3,583,955	Lagrange.	755,810
Kosciusko	3,555,371	Marion	750,290
Randolph	2,937,315	Lake	720,015

<i>County.</i>	<i>Cheese, Pounds.</i>
Adams	173,047
Porter	94,307
Wells.	69,201
Lake	37,306
Clark.	22,760

Counties producing the most milk according to size, 1887 :

<i>County.</i>	<i>Square Miles.</i>	<i>Gallons.</i>	<i>Average No. Gal- lons per Square Mile.</i>
Marion	420	4,525,975	10,776
Porter	420	3,583,955	8,533
Hancock	307	2,316,780	7,546
Delaware	399	2,727,802	6,836
Allen.	670	4,528,513	6,758

Counties in the State producing the most butter according to size, 1887 :

<i>County.</i>	<i>Square Miles.</i>	<i>Pounds.</i>	<i>Average No. Lbs. per Square Mile.</i>
Lagrange	388	755,810	1,947
Randolph	444	797,428	1,795
Marion	420	750,290	1,786
Marshall	441	689,924	1,564
St. Joseph.	450	655,911	1,457

Counties in the State producing the most cheese according to size, 1887 :

<i>County.</i>	<i>Square Miles.</i>	<i>Pounds.</i>	<i>Average Lbs. per Square Mile.</i>
Adams	360	173,047	480
Porter	420	94,307	224
Wells	372	69,201	186
Clark.	367	22,760	62
Dekalb	370	20,410	55

FENCING AND DRAIN TILE, 1888.

COUNTIES.	Number of Rods of Rail Fencing.	Number of Rods of Board Fenc'g.	Number of Rods of Wire Fenc'g.	Rods of Drain Tile Laid in 1888.	Rods of Drain Tile in Opera- tion in 1888.
Adams	1,164,341	86,393	14,198	120,498	452,972
Allen	1,441,459	308,996	41,927	108,092	549,426
Bartholomew	918,299	101,871	34,142	119,015	412,659
Benton	36,976	152,054	75,076	43,149	331,051
Blackford	610,682	24,159	7,330	38,566	274,841
Boone	1,187,321	71,501	21,551	96,194	771,403
Brown	984,093	12,032	3,520	227	8,527
Carroll	801,792	85,244	36,129	45,488	448,735
Cass	1,318,912	246,212	77,996	72,082	523,794
Clark	1,275,210	90,500	25,000	6,005	12,578
Clay	798,273	70,191	22,462	6,940	11,812
Clinton	1,070,360	122,342	30,670	111,180	927,088
Crawford	1,182,664	13,364	8,157	200	530
Daviess	1,357,539	31,675	21,558	34,984	75,484
Dearborn	647,867	39,441	23,132	1,030	5,162
Decatur	1,231,182	75,978	45,403	53,403	783,425
Dekalb	1,284,850	106,396	13,289	74,830	234,941
Delaware	1,503,265	141,603	26,174	67,199	454,935
Dubois	1,133,368	39,832	12,004	1,490	5,319
Elkhart	543,705	108,361	40,150	76,683	229,452
Fayette	419,460	73,189	21,462	21,776	129,023
Floyd	275,647	13,570	9,300	7,333	16,153
Fountain	1,147,622	65,829	31,574	93,447	361,189
Franklin	1,300,976	71,527	17,615	10,742	286,225
Fulton	769,301	167,334	50,472	41,792	155,086
Gibson	1,101,758	81,960	58,932	14,307	229,615
Grant	1,478,950	83,253	27,557	166,171	826,858
Greene	1,622,619	147,896	22,657	15,596	46,747
Hamilton	1,392,346	111,906	29,651	142,191	738,996
Hancock	964,431	61,384	53,232	54,906	637,956
Harrison	1,293,399	44,924	20,894	650	3,793
Hendricks	2,240,348	90,354	32,685	42,782	511,058
Henry	1,406,114	124,245	39,373	53,423	563,249
Howard	621,242	66,513	19,627	44,731	670,238
Huntington	1,159,956	93,331	37,032	57,156	522,717
Jackson	1,066,666	79,929	20,769	5,214	35,772
Jasper	204,914	20,987	275,769	6,536	38,958
Jay	1,271,519	80,545	18,271	46,516	519,130
Jefferson	490,471	51,699	27,340	702	4,652
Jennings	1,002,110	82,728	34,388	2,742	19,504
Johnson	908,155	64,563	30,526	46,278	439,360
Knox	872,153	53,910	38,219	19,155	72,636
Kosciusko	1,403,214	122,793	38,864	32,026	211,739
Lagrange	1,075,124	101,486	17,572	10,218	35,522
Lake	79,004	69,852	400,827	11,294	27,825
Laporte	177,644	172,555	146,808	5,354	14,462
Lawrence	990,060	40,663	20,471	138	7,208
Madison	1,119,155	73,996	8,679	70,123	530,448
Marion	852,750	250,500	25,855	40,000	740,500
Marshall	1,172,352	204,641	63,516	27,927	161,045

FENCING AND DRAIN TILE—Continued.

COUNTIES.	Number of Rods of Rail Fencing.	Number of Rods of Board Fencing.	Number of Rods of Wire Fencing.	Rods of Drain Tile Laid in 1888.	Rods of Drain Tile in Opera- tion in 1888.
Martin	1,169,924	16,345	6,817	2,400	11,766
Miami	1,270,332	111,738	33,555	47,303	558,318
Monroe	85,902	41,441	8,095	4,662	13,694
Montgomery	1,324,129	127,790	54,174	97,975	462,883
Morgan	943,550	44,040	28,560	22,077	197,386
Newton	32,647	21,211	14,483	8,818	99,368
Noble	1,450,210	70,677	14,651	18,950	164,167
Ohio	227,587	12,784	5,611	375	375
Orange	1,228,200	22,994	17,030	2,998	6,827
Owen	1,263,764	42,789	10,387	1,466	5,374
Parke	942,406	62,445	29,670	18,230	191,533
Perry	648,737	18,470	26,622	984	1,586
Pike	813,290	29,354	25,072	2,774	10,984
Porter	269,727	142,085	164,758	3,177	11,533
Posey	943,041	55,405	76,728	37,020	200,408
Pulaski	650,125	145,650	160,750	13,764	66,675
Putnam	1,109,769	151,302	15,344	22,734	170,086
Randolph	2,359,155	208,380	25,985	138,443	842,545
Ripley	1,276,481	78,439	19,222	2,692	12,768
Rush	1,650,000	97,500	40,550	95,500	744,129
Scott	439,489	21,266	13,829	13,916	47,848
Shelby	950,257	99,924	37,523	103,133	694,408
Spencer	822,509	60,889	12,660	5,150	28,852
Starke	129,676	38,342	71,390	1,200	9,256
Stenben	828,058	76,123	11,045	18,386	102,487
St. Joseph	414,277	151,671	159,115	30,756	114,645
Sullivan	1,119,614	42,884	16,231	15,713	47,863
Switzerland	524,200	18,018	32,905	425	2,690
Tippecanoe	672,343	205,625	173,744	72,535	419,136
Tipton	758,510	118,643	17,112	53,722	492,399
Union	370,881	141,245	25,336	9,766	218,551
Vanderburgh	237,445	22,338	8,107	21,998	101,458
Vermillion	475,036	29,248	43,222	20,843	173,156
Vigo	989,802	50,233	44,291	8,139	36,644
Wabash	1,207,066	133,012	48,937	164,969	844,714
Warren	402,723	40,872	31,902	8,433	173,361
Warrick	1,110,670	54,747	8,113	14,073	76,031
Washington	1,572,482	37,818	19,751	2,936	21,567
Wayne	1,996,232	257,729	73,054	41,163	375,182
Wells	1,512,748	112,635	19,420	96,462	725,940
White	306,855	72,135	190,061	26,550	138,955
Whitley	785,261	71,613	14,598	54,645	293,604
Total	87,656,768	8,054,947	4,070,215	3,415,461	24,443,548

BOARD OF AGRICULTURE.

DRAINAGE FOR SIX YEARS.

Year.	Total Rods Drain Tile.	Average No. Rods to Sq. Mile.
1888	24,443,548	677
1887	21,028,087	582
1886	19,457,280	538
1885	17,161,085	475
1884	14,958,347	416
1883	11,487,814	319

COAL.

A comparative statement of the coal mined in the State for the past six years:

Year.	Total Production in Tons.
1888	3,140,979
1887	3,217,711
1886	3,000,000
1885	2,375,000
1884	2,260,000
1883	2,560,000

The coal-producing counties of the State are:

COUNTIES.	Number of Mines.	Number of Men Employed In- side.	Number of Men Employed Out- side.	1887.	
				Number of Mines.	Number of Em- ployed.
Clay	45	3,110	213	38	2,976
Davless	15	438	61	15	655
Dubois	10	60	12	11	72
Fountain	10	73	14	13	196
Greene	9	398	39	9	307
Gibson	3	6	3	3	9
Knox	3	65	7	3	72
Martin	3	15	3	3	18
Owen	5	30	5	6	115
Perry	12	114	20	16	138
Parke	17	639	70	17	606
Pike	18	291	50	17	400
Sullivan	13	439	70	15	485
Spencer	10	35	10	8	26
Vigo	17	563	65	14	508
Vermillion	5	220	30	8	300
Vanderburgh	5	197	32	5	261
Warrick	13	75	12	15	71
Warren	2	17	2	5	19
Total	217	6,685	718	220	7,304

STATE BOARD MEETINGS, 1888.

FEBRUARY MEETING.

FEBRUARY 21.

The Board met pursuant to adjournment January 5, 1888, with President Davidson in the chair. Present—Robert Mitchell, of Gibson; Gerard Reiter, of Knox; J. Q. A. Seig, of Harrison; W. B. Seward, of Monroe; V. R. Officer, of Jefferson; E. H. Peed, of Henry; John M. Boggs, of Tippecanoe; J. A. McClung, of Fulton; W. A. Banks, of Laporte, and R. M. Lockhart, of Dekalb County.

The Indiana Kennel Club was requested to furnish a classification of premiums for the Dog Department of the State Fair, to be considered by the Board in revising the premium list.

A communication from Carl Sprannagel, of Berlin, Germany, regarding the manufacture of Portland Cement from Indiana material was referred to the Indianapolis Board of Trade.

A Communication relating to the Fish and Carp Exhibit at the State Fair was referred to the Committee on the Revision of the Premium List.

Mayor Denny's suggestion that the Executive Committee of the Board meet a committee from the Indianapolis Board of Trade and arrange for special attractions fair week, was approved.

The Secretary was instructed to purchase cases for the Agricultural Museum.

The thanks of the Board were tendered Hon. W. D. Bynum, M. C., for suggestions relating to the building of the new amphitheatre.

Mr. J. D. Conner, Secretary of the Belgium Horse Breeder's Association of America, asked that a class for this new importation of horses be incorporated in the premium list. A motion to grant the request was tabled.

Wm. B. Burford was instructed to furnish 5,000 lithograph posters.

It was ordered that the aggregate amount of cash premiums for 1888 be the same as the year previous.

Classes for Belgium and French Coach horses were created, as also other new classes recommended by the Committee of the Whole on the Revision of the Premium List.

Adjourned.

FEBRUARY 22.

Board met with all members present except R. C. McWilliams. The recommendation of the Delegate Board to inaugurate the one-judge system, and that said judge be an expert, was considered and adopted for the Live Stock Department.

One hundred dollars was appropriated, to be divided into three premiums, for the best beef exhibit at the fair.

The matter of locating the new track, amphitheatre, and other proposed improvements, was referred to the Executive Committee.

Mr. Seward was instructed to have made an accurate survey of the grounds and prepare a plat incorporating and locating thereon, definitely, the new track, amphitheatre, and other buildings proposed to be removed or replaced.

A resolution by Mr. Mitchell authorizing the Executive Committee to borrow such an amount of money necessary to build new buildings, a new race track, and make other improvements contemplated by the Board, was adopted.

The Board then went into Committee of the Whole on the Revision of the Premium List and occupied the time until adjournment in the evening in considering the same.

FEBRUARY 23.

Board met with President Davidson in the chair.

A resolution prevailed allowing \$5 per day to judges in all classes where but one expert is employed, and \$3 per day to judges in classes where more than one is required, beside an amount in addition covering the actual railroad fare of such judges.

It was ordered that the Exposition building be opened on Wednesday and Thursday evenings of fair week, and that suitable entertainments be provided, and an admission fee charged.

The President announced the following Superintendents of Departments:

Draft Horses, V. K. Officer; Light Harness, Mules and Horse Stalls, W. A. Banks; Speed Ring, Dick Jones; Cattle, Beef Breeds, Robert Mitchell; Dairy Breeds, J. Q. A. Sieg; Hogs, E. H. Peed; Sheep, S. W. Dungan; Poultry, J. A. McClung; Dogs, George Jackson; Farm and Garden Products, Willis Blanche; Horticulture, R. M. Lockhart; Mechanical Department, Robert Simonton and Gerard Reiter; Engines, Robert Simonton; Lower Floor, W. B. Seward; Upper Floor, Women's State Fair Association; Geology, Natural History, etc., Prof. S. S. Gorby; Gates, J. M. Boggs; Amphitheater, R. C. McWilliams.

Gate-keepers and all other employes were allowed the same compensation as was paid in 1887, and the Superintendent of Gates was authorized to employ his own assistants.

It was ordered that all advertising signs be of uniform size and height, and in no case should the light in the Exposition Building be obstructed.

The premium list as revised in committee of the whole, was adopted, and 10,000 copies ordered printed.

All unfinished business was referred to the executive committee, and the Board adjourned to meet at the Fair Grounds, September 17.

EXECUTIVE COMMITTEE MEETINGS.

APRIL 10.

The Executive Committee met on call of the President. Present Messrs. Davidson, Blanche, Mitchell and Peed.

The National Association of Expert Judges on Swine were granted the use of the Exposition Building from July 31 to August 2 inclusive, to hold meetings, examine candidates, and qualify experts on hogs, that Fair Associations may have the advantage of first-class judges in the Hog Department the coming season.

The Board's membership in the American Trotting Association was ordered continued.

The Treasurer's bond was officially accepted and ordered filed.

On Mr. Mitchell's motion a loan of \$10,000 was authorized to make needed improvements on the Fair Grounds.

It was ordered that the new amphitheatre be constructed 400 feet long, by 40 feet in width.

Messrs. Lockhart and Seward were authorized to visit, at the Board's expense, the Ohio State Fair Grounds at Columbus, and examine the plans of the amphitheatre and stable for the purpose of securing ideas as to the construction of the new amphitheatre.

General Superintendent R. M. Lockhart was awarded the contract for making the new race track at a cost of \$1,300.

Adjourned.

JUNE 5.

The Executive Committee was called to order by the President. Present: Messrs. Davidson, Mitchell, Seward, Blanche, and Peed.

The selection of expert judges to serve in the live stock department was made, subject to amendment, provided any of those chosen were unable to attend the fair.

The bids for the construction of the amphitheatre were opened, and Seward & Co., of Bloomington, Ind., being the lowest bidders (\$8,340), the contract was awarded to this firm, and a bond for \$2,500 was required of them for the faithful performance of the work and completion of the building by September 1, 1888.

The President, Secretary and Mr. Seward were authorized to accept the new race track, if built according to contract.

The proper officers were authorized to draw up a lease allowing the Consumer's Gas Trust to locate a reducing station at the northeast corner of the grounds.

Adjourned.

AUGUST 1.

The Executive Committee met on call of the President. Present: Messrs. Davidson, Mitchell, Seward, Blanche and Peed.

The Secretary was instructed to contract with the Whiteland Band at \$250, to furnish music fair week.

The bond of Seward & Co., to construct the amphitheatre, according to contract, was accepted, with H. J. Perry and Jno. F. May, of Bloomington, Ind., as sureties.

At the request of the Y. M. C. Ass'n, a bicycle track inside the speed ring was authorized.

The General Superintendent was ordered to make a number of improvements in the way of repairing, whitewashing, etc.

Adjourned.

SEPTEMBER 4.

The Executive Committee of the Board met on call of President Davidson. Present: Messrs. Peed, Blanche, Mitchell, and Seward.

The price of admission to the new grand stand was placed at 15 cents, and 25 cents for reserved seats.

The speed ring was accepted from the contractor, R. M. Lockhart, after an inspection by the committee.

The amphitheatre was also accepted as erected by Seward & Co.

Adjourned.

EXPOSITION MEETINGS.

SEPTEMBER 17, 1888.

The Board met pursuant to adjournment, with President Davidson in the chair.

A request from the Hereford cattle men that two extra ribbons upon which "Commended" and "Highly Commended" be printed and given in the award of premiums in the Hereford department, was granted.

Mr. W. B. Seward was appointed to fill the position of Superintendent of the Mechanical Department, vacant on account of the unavoidable absence of Messrs. Reiter and Simonton.

Adjourned.

SEPTEMBER 19, 1888.

Board met, all members present except Messrs. Simonton and Lockhart.

On motion of Mr. Boggs, gate-keepers were allowed actual railroad fare necessary to go to and from their homes.

Messrs. Seward and Heron were appointed a committee to adjust all accounts connected with building the amphitheater.

Messrs. Mitchell, Banks and Jones were appointed to represent the Board at the meeting of the International Association of Fair Managers, to be held at Chicago in November.

On motion the committee were instructed to recommend a fair circuit, to hold fairs in the following order: Ohio, Indiana, Illinois and St. Louis.

Mr. Seward and Secretary Heron were instructed to settle with Treasurer Johnson and receive the unsold tickets.

Adjourned.

EXECUTIVE COMMITTEE MEETING.

OCTOBER 30.

The committee met. Present: Messrs. Davidson, Mitchell, Seward, Blanche and Peed.

The protest in the three-minute race at the State Fair was sustained, proof being offered and substantiated that "Joe Hambleton" had a previous record of 2:50.

Messrs. Banks and Boggs were selected as delegates to the Middle States' Fair Circuit, to be held at Chicago November 14, 1888.

Premiums on corn and wheat were authorized, the samples shown to be kept by the Board and placed in the Agricultural Museum.

Adjourned.

ANNUAL MEETING, 1889.

JANUARY 8, 10:30 A. M.

The Thirty-seventh Annual Convention of the Delegate State Board of Agriculture assembled in the lecture room of the State Board, Capitol Building, with President Davidson in the chair. The gavel fell promptly, and the Secretary proceeded to call the roll. The district call showed present:

- 1st District—ROBERT MITCHELL, Princeton, Gibson County.
- 2d District—
- 3d District—J. Q. A. SIEG, Corydon, Harrison County.
- 4th District—W. B. SEWARD, Bloomington, Monroe County.
- 5th District—V. K. OFFICER, Volga, Jefferson County.
- 6th District—DICK JONES, Columbus, Bartholomew County.
- 7th District—E. H. PEED, New Castle, Henry County.
- 8th District—S. W. DUNGAN, Franklin, Johnson County.
- 9th District—R. C. McWILLIAMS, Rockville, Parke County.
- 10th District—JASPER N. DAVIDSON, Whitesville, Montgomery County.
- 11th District—
- 12th District—JOHN M. BOGGS, Lafayette, Tippecanoe County.
- 13th District—WILLIS BLANCHE, Kokomo, Howard County.
- 14th District—J. A. McCLUNG, Rochester, Fulton County.
- 15th District—W. A. Banks, Door Village, Laporte County.
- 16th District—R. M. LOCKHART, Waterloo, Dekalb County.

The call of County Societies showed:

DELEGATES PRESENT.

COUNTIES.	DELEGATES.	POSTOFFICE.
Bartholomew	J. L. Jones	Columbus.
Bartholomew Ag'l and Indus'l	Joel Davis	Columbus.
Boone	John Higgins	Thorntown.
Clark	Henry F. Work	New Washington.
Cass	G. D. Custer	Logansport.
Clinton	Jas. McDavis	Mulberry.
Decatur	John F. Childs	Greensburg.
Delaware	T. W. Tuttle	Muncie.
Fulton	Geo. Perschbacher	Tiosa.
Gibson	Robert Mitchell	Princeton.
Grant	J. Strange	Arcanna.
Greene	D. J. Terhune	Linton.
Greene	Samuel W. Axtell	Bloomfield.
Hamilton	C. J. Clark	Westfield.
Hancock	Jno. H. White	Greenfield.
Harrison	Jas. A. Harbison	Breckinridge.
Henry	J. S. Hedges	New Castle.
Hendricks	A. W. Carter	Cartersburg.
Howard	W. J. Floyd	Middle Fork.
Huntington	L. T. Bagley	Huntington.
Jackson	Frank Branaman	Brownstown.
Jay	E. Lyons	Boundry.
Jefferson	D. P. Monroe	Saluda.
Jennings	J. B. Smith	Queensville.
Johnson	Dr. W. M. Province	Providence.
Knox	M. O'Donnell	Vincennes.
Laporte	Geo. W. Rogers	Laporte.
Madison	John P. Barnes	Anderson.
Marion	Fielding Beeler	Indianapolis.
Monroe	A. E. Johnson	Ellettsville.
Montgomery	F. L. Snyder	Crawfordsville.
Newton	Wm. Darroch	Kentland.
Noble	E. B. Gerber	Ligonier.
Owen	W. M. Franklin	Spencer.
Parke	Jas. A. Allen	Rockville.
Posey	Jno. B. Elliott	New Harmony.
Putnam	J. W. Robe	Greencastle.
Randolph	M. T. Buck	Winchester.
Rush	F. A. Capp	Rushville.
Shelby	Sid Conger	Flat Rock.
Spencer	Col. A. J. Wright	Chrisney.
Steuben	A. W. Hendry	Angola.
Sullivan	Uriah C. Coulson	Sullivan.
Tippecanoe	Albert Henderson	Lafayette.
Tipton	G. W. Myerly	New Lancaster.
Vigo	J. M. Sankey	Terre Haute.
Wabash	Wm. Hazen	Wabash.
Warren	W. H. Goodwine	West Lebanon.
Wayne	J. C. Stevens	Centreville.
Whitley	Col. I. B. McDonald	Columbia City.

The District Societies were represented as follows :

DISTRICTS.	DELEGATES.	POSTOFFICE.
Acton	J. E. McGaughey.	Gallaudet.
Bridgeton Union	Dempsey Seybold.	Perth, Clay Co.
Eastern Indiana.	E. B. Spencer	Kendallville.
Fairmount Union	John Flanagan.	Fairmount.
Fountain, Warren and Verm'n	D. Furguson	Covington.
Henry, Madison and Delaware	W. H. Keesling	Mechanicsburg.
Knightstown Union	S. B. Hill	Charlottesville.
Miami and Fulton.	J. A. McClung.	Wagoner.
Northeastern Indiana	J. C. Boyer	Waterloo.
Northern Ind. and S. Mich. .	Samuel Bowman	South Bend.
North Salem	John Durham	North Salem.
North Manchester.	B. F. Clemens	North Manchester.
Warren Tri County	Isaac F. Beard.	Warren.
Wayne, Henry and Randolph.	B. B. Beeson	Dalton.
Urmyville	John Tillson	Franklin.

The State Associations were represented as follows:

ASSOCIATIONS.	NAMES.	POSTOFFICE.
Horticultural	Dr. A. Furnas	Danville.
Women's Industrial	Mrs. A. M. Noe	Indianapolis.
Purdue University.	Prof. Smart	Lafayette.
Shorthorn Breeders	Robt. Mitchell	Princeton.
Wool Growers.	S. W. Dungan	Franklin.
Florists.	W. H. Lawrence	Brightwood.

The resignation of Hon. Gerard Reiter as a member of the Board of Agriculture from the Second District was tendered, and accepted.

The President announced the following Standing Committees:

On Credentials—Messrs. Robert Mitchell, J. A. McClung, Joel S. Davis and W. H. Goodwine.

On Finance—Messrs. W. B. Seward, J. M. Boggs, F. L. Snyder and G. W. Rodgers.

Board adjourned,

AFTERNOON SESSION.

The Board met with President Davidson in the chair, who announced a letter from Robert Simonton, expressing regrets for not being able to attend the meeting on account of sickness.

Hon. W. A. Banks was called to preside while Hon. Jasper N. Davidson delivered his annual address.

THE PRESIDENT'S ADDRESS.

Plenty and prosperity have especially blessed our land during the past year. With ample stores of fruit, forage and cereals, it becomes our sacred duty to return thanks to the Author of all good. The farmer, so largely dependent on Nature for all "creature comforts," can appreciate her smiles in ten fold degree. The great crop, so closely allied to the interests of all classes, is worthy of especial mention, and we proudly quote 130,000,000 bushels as our State's yield of corn. Wheat follows with 35,000,000, and oats add 26,100,000 bushels to the grain production of 1888 in Indiana.

As executive of the Board of Agriculture, according to custom, it becomes my duty to review the work entrusted to us, and recommend a course to those who follow. First, let us extend a welcome to those who join us for the first time by the reconstruction of county and district societies. Be free to enjoy and reap the benefits of our annual meeting. Do not imagine that we as a Board have learned all that is worth knowing, but give us fresh ideas and add zeal and impetus to the session. To the old familiar faces we extend cordial greeting and ask your hearty cooperation in all measures tending toward the advancement of agricultural industries.

The societies represented by the Delegate Board are organized for the purpose of disseminating knowledge relative to farm and kindred interests. In January of each year we hold a sort of experience meeting and secure a free interchange of views concerning new breeds and classifications of stock, the best manner of awards, the relations of the society to the exhibitor and public, and rules of general management. The old adage, that "time and tide wait for no man," is certainly exemplified in the pressing work attendant on annual fairs. The close of one is swiftly followed by preparation for another, until the years seems but as yesterday.

The primary object of fairs is to spread useful knowledge among the masses. It is in one sense a farmer's school where keen wits can derive many practical lessons. Besides, it *pays* to learn how three pounds of beef, pork or wool can be produced at a less cost than two pounds in former years. To make a striking object

lesson we suggest that breeders place on exhibition a specimen of the original stock of the country, side by side with the aristocratic animals. I am sorry to say a reasonable price will find them in many localities of our State. Place a scrub by a high-bred steer, a heavy-jointed clay-bank colt by the symmetrical scion of a pedigreed horse, an elm-peeler by the classical proportions of a Chester White or Berkshire. A sheep clothed half in hair and half in wool by the snowy-coated, broad-backed "horned patriarch" of the present shepherd's flock.

Excuse the innovation, but we believe a more potent impression could scarcely be made. The idea is not original save as applied to live-stock. Implement men frequently find advantage in showing the crude mechanism of former years by the perfected machine of to-day. As well a scrub, by a standard as the first engine by the present Mogul. The evolution of one has not been greater than the advance of the other. As a Board, we take pride in our free-day exhibit to the school children of city and county, and the lesson should be striking and powerful. A troop of noisy children, heedlessly tripping through park and hall seem little disposed to preserve many ideas, yet the growing intellect is a sensitive plate whereon each day some picture is photographed. The more striking the object, the stronger the impression.

The show of live-stock and all agricultural products was larger than ever before at our last fair. In the poultry department, the exhibit for some reason fell below the average. Acres were covered with fine machinery, gates, fences and patent labor-savers. Pomona herself might have felt exultant among the various horticultural products, which added beauty and a wholesome fragrance to the lower floor of the Exposition building. Flowers lent their usual charms alike shared by the rustic and the connoisseur.

The new addition to the ground and the beautiful grand stand afforded ample room for our thousands of visitors with space to spare. The attendance, though good, did not average that of former years. Is it necessary to define the reason when cannons have barely ceased their triumphal roar in honor of Indiana's brave son? For the first time in our seventy-two years of State life, a citizen was nominated for the highest office in the land. With just pride every county was ablaze with political excitement. Delegations came each day for weeks before the fair to greet their distinguished countryman. The general apathy as to all things unpolitical, and local rains on our principal days, prevented many from leaving home. Cincinnati and Columbus each had counter attractions, and reduced rates were given to these points on all the roads. All things considered, we rate the attendance as phenomenal.

In regard to the expert system, we are pleased to report that no protests were filed in any department where the one judge system prevailed. General satisfaction was the rule. If this plan continues to prove good, every breed demands a specialist and should by all means have it.

The chief difficulty is the expense involved in securing competent judges from a distance. We recommend that smaller premiums be given if necessary to meet the added expenditure. In this way part of it falls on the exhibitor indirectly. It

occurs to me that when live-stock associations educate special judges they may defeat the end in view by forming unions and thereby fixing exorbitant prices. This feature appeared at our last exhibit.

The Board must necessarily publish and distribute premium lists containing rules of awards months before the fair. Thus they are in a bad condition to stand an expert strike. We recommend the Board to ask such associations to fix relative and reasonable per diem and mileage rates for expert services. The system could then be more easily adopted.

Some method should be devised to encourage the home breeder as well as the importer. The latter is frequently a breeder also, and to discriminate between the ones who do both and the breeder only, an entrance fee might be charged on all imported animals. Let this matter be well considered.

Since the question of removal has been settled there has been a steady demand for leases by implement men, who wish to erect substantial buildings. Such leases must receive careful attention in order that individual rights shall be preserved.

It affords me much comfort to state that the street-car lines have increased their facilities for carrying passengers. Double tracks reach the ground at different points and enable large crowds to come and go without painful crowding. We soon expect a West Side line to land visitors at the northwest corner of the enclosure, a still greater advantage.

Business rules must regulate the sales of privileges. The lessee should be required to sign a contract forfeiting fixtures on — day of Fair in default of payment of fee. It is apparent that a large number of irresponsible persons follow Fairs for the purpose of swindling the people and beating the management. The goods on sale are frequently inferior and eatables unwholesome, giving room for just complaint against the Board.

Supply wagons should in all cases be required to purchase entrance license, thus saving gatemen much trouble and dispute. The rebate on tickets to lessees ought to be abolished and each privilege sold on its merits. The practice is abused by such tickets being sold at a reduced price, and unjust discrimination against the general patron.

Since the grounds have been extended and the duties of the general superintendent increased, we recommend the creation of a new department of stalls and stall rents. It should be controlled by a member of the Board during Fair week. This superintendent should use a printed receipt book with stub attached, and report to Secretary all collections of money for stall rents and from whom, at close of exhibition.

Financially, the condition of the Board is not so good as heretofore in the sense of indebtedness, yet as collateral its value has increased. The necessity of moving or enlarging the grounds was clearly demonstrated two years ago, and by a fortunate purchase twenty acres were added at a cost of \$15,000. Five thousand of this amount has been paid from the earnings of the Board, and \$10,000 is drawing 5 per cent. interest, payable semi-annually. The old bonded debt of \$35,000 draws the same rate. The assessment bonded debt approximates \$7,000, but bears

no interest. The expenditures in '88 were necessarily large, the general construction and repair bills amounting to near \$5,500. The grand-stand and track cost \$10,000. This has been paid from Board funds, excepting \$6,500 which is now our floating debt. The aggregate debt approximates \$58,500. No pro rata settlements have been made with employe or exhibitor, but individual aid and security have been used to meet the legitimate demands of the Board. To pay premiums in keeping with the wealth of an agricultural State like Indiana and bear running expenses, a long series of fortunate years would be required to produce surplus enough to banish the debt. The natural beauties, fortunate location and many new and permanent improvements make the grounds immensely valuable. Yet however great its worth as collateral it must be maintained intact for the State's annual exhibit.

It is a well-known fact that our last Legislature would have made an appropriation sufficient to extinguish the debt in a short time had it not been for the unfortunate dead-lock. We have an abiding faith that the present one will take prompt measures to relieve the Board of this incubus, and we earnestly ask each delegate to make it a personal matter and assist in bringing the relief.

At our last delegate meeting it was resolved that the State Board be instructed to provide for a series of Farmer's Institutes to be held during the year in each agricultural district. In compliance with the order thirteen were held in different parts of the State. The work was accomplished by members and delegates naming a date in localities where such meetings were desired, the entertainment and expenses being provided by friends of the enterprise. Generally the attendance was good and the interest in the work manifested a desire for other appointments. Should this system become regular and practicable much useful knowledge might be spread among the people. It can not be denied that Indiana farmers have failed to work in unison in urging their claims before the Legislature for the necessary expenses. Until this is done, the work can only be partially successful. The laborer in such a field is certainly worthy of his hire.

The State Industrial Associations, composed of our most energetic and progressive citizens, are acknowledged leaders in the advancement of their specialties. All practical subjects in our line are embraced in their work, which becomes more interesting each year. Our interests are mutual and we solicit your coopération and encouragement. The extensive railroad systems bringing from the West so much stock infested by disease imperil our live stock industries. The Board should memorialize the present Assembly to pass a law enabling the Executive to quarantine the State on authentic outbreak of disease.

The Women's State Fair Association has for many years been identified with our interests and deserves more than a passing notice. Their claim to being the only woman's association auxiliary to the State Board goes without dispute. Their domain consists of 36,640 square feet of floor and 10,000 feet of wall space. Every foot was this year occupied by beautiful and attractive displays. The rules and system of government are peculiarly their own, and challenge the admiration of visitors and Fair managers from abroad. We who know their untiring energy and many responsibilities are justly proud of such valuable and intelligent coopération work.

With pleasure we record that the last National House of Representatives passed a bill creating a Department of Agriculture. The Senate amended by striking out the weather bureau, allowing the signal service to remain under control of the War Department. The bill was placed in the hands of conference committees, but before an agreement was reached the House adjourned. However, it is only a question of a short time when agriculture will receive just recognition from federal authority.

We mention as a matter of regret that the annual report of this Board is published so late in the year. A reform seems advisable, as much valuable matter thus becomes stale to the popular mind. With pride we invite attention to the last report compiled by our worthy Secretary. It has received many favorable comments both from home and abroad.

In behalf of the Board, let us now tender thanks to the railroads centering in this city which gave special rates during Fair week. Our attendance was increased and the benefit was mutual. To the street-car lines we also extend thanks for courtesies shown the Board. The potent influence of city and State press is acknowledged, and we gratefully accept their invaluable aid. So long as worthy we solicit your recognition in advancing the material interests of our State.

Having mentioned all the points which occur to my mind as pertinent to the occasion, I now desire to personally thank my colleagues and all attaches of the Board for their uniform kindness. Since my connection as a member may close with this session, I wish to express my implicit faith in the future success of the Board and its interests. From time to time, new hands and new minds will take up the work, and while we advise careful study of past methods, do not fear to make innovations. The present age of progress demands swift evolution, and we believe the educated farmers of Indiana will maintain the present standing of the State Board of Agriculture.

The address was referred to a special committee consisting of Messrs. Dick Jones, Capt. O'Donnell and Samuel Bowman.

Secretary Heron submitted his annual report as follows :

SECRETARY'S REPORT.

Gentlemen—I have the honor to submit herewith my annual report and financial exhibit of the business of the Indiana State Board of Agriculture for the year ending December 31, 1888 :

Total receipts from all sources.	\$40,566 23
--	-------------

EXPENDITURES.

General cash orders.	\$31,163 97	
Premium orders	9,917 50	
	<hr/>	\$41,081 47
Deficit		515 24
		<hr/>
Total		\$40,566 23
		<hr/>

ITEMIZED RECEIPTS.

January 1, cash in treasury	\$8,415 14	
Regular appropriation	1,500 00	
Campbell note and interest	1,075 00	
By note to S. Johnson	1,100 00	
By notes Indianapolis National Bank	6,354 68	
	<hr/>	\$18,444 82
Sale 50c admission tickets by Treasurer . .	\$13,715 50	
Sale 50c admission tickets by Secretary . .	117 01	
Sale 50c admission tickets by Seward . . .	29 75	
Sale 50c railroad coupons	311 00	
	<hr/>	\$14,173 26
Sale 25c admission tickets	\$1,127 00	
Sale 25c amphitheater	\$187 25	} 1,136 30
Sale 15c amphitheater	949 05	
Sale exhibitors' tickets at \$1 each.	65 00	
	<hr/>	2,328 30
		<hr/>
		16,501 56
Rents, summer	\$499 60	
Rents, Women's Department	167 92	
Fair privileges, stands	3,082 50	
Fair privileges, stalls and pens	888 73	
	<hr/>	4,638 75
Entry fees, speed.	\$909 00	
Entry fees, dogs	43 00	
Coop rents.	24 60	
Rebate on insurance policy	4 50	
	<hr/>	981 10
		<hr/>
Total		\$40,566 23

GENERAL EXPENSES.

Members' per diem	\$1,571 72	
Salaries	1,899 96	
Printing and advertising	945 64	
Postage and stationery	268 12	
Express, telegrams, incidentals	173 18	
Janitor, tools and water rent	450 00	
Insurance	460 05	
Old claims paid	732 28	
Banking and interest accounts	5,728 61	
	<hr/>	
Total		\$12,229 56

CONSTRUCTION AND REPAIRS.

Labor	\$2,159 64	
Lumber	1,578 73	
Pipes and machinery, pumps, etc	380 30	
Roofing	457 53	
Hardware	158 72	
Brick and Cement	82 20	
Repairs	62 90	
Moving stables	550 00	
Paints, oil, etc	61 75	
Judges' stand	139 00	
	<hr/>	\$5,630 77
Amphitheater		8,741 65
Speed ring		1,300 00
		<hr/>
Total construction account		\$15,672 42
		<hr/> <hr/>

CURRENT EXPENSES, STATE FAIR.

Gate-keepers	\$183 50	
Police	418 75	
Labor and sweepers	230 75	
Awarding committees	529 80	
Assistant Superintendents	177 15	
Straw and sawdust	317 75	
Fuel and power	56 95	
Dog Department	43 00	
Gas	89 63	
Ribbon	43 45	
Music	250 00	
Rent of tent, show-cases, etc.	116 00	
Closets	22 00	
Rebates	57 12	
Drayage, express and incidentals	32 40	
Sprinkling	24 50	
Trotting Association fees, etc	29 00	
	<hr/>	\$2,621 75
Womans' Department		640 24
		<hr/>
Total		\$3,261 99
		<hr/> <hr/>

PREMIUM AWARDS.

Cattle Department	\$2,026 00	
Horse Department	3,535 00	
Sheep Department	583 00	
Hog Department.	821 00	
Poultry Department	321 00	
Dog Department	107 50	
	<hr/>	\$7,393 50
Agriculture	\$421 50	
Horticulture.	763 00	
Geology and Natural History	143 00	
	<hr/>	1,327 50
Womans' Department.	\$1,088 00	
Children's Department	108 50	
	<hr/>	1,196 50
Total		<hr/> <hr/> \$9,917 50

STATE FAIR, INCLUSIVE.

Receipts.

Admission tickets	\$16,501 56	
Entry fees	981 10	
Rents and privileges	4,638 24	
	<hr/>	
Total		<hr/> <hr/> \$22,120 90

Expenses.

Members per diem	\$1,571 72	
Salaries, officers	1,899 96	
Printing and advertising	945 64	
Postage, etc	268 12	
Expressage, telegrams, etc.	173 18	
Current expenses	3,261 99	
Twenty per cent. improvement account	3,134 48	
Premium awards	9,917 50	
	<hr/>	\$21,172 59
Profits		948 31
Total		<hr/> <hr/> \$22,120 90

RECAPITULATION.

General expenses	\$12,229 56	
Construction and repairs	15,672 42	
Current expenses State Fair	3,261 99	
	<hr/>	\$31,163 97
Premium awards		9,917 50
		<hr/>
Total disbursements		\$41,081 47
Shortage in Treasury		515 24
		<hr/>
Total receipts		\$40,566 23
		<hr/> <hr/>

INSURANCE.

On the Main Building, rate 1½	\$25,500 00
On the Grand Stand, rate 1½	8,000 00
On the Stabling, rate 1½	2,800 00
On the Stock Pens, rate 1½	1,000 00
On the Dwelling House, rate 40 cents	600 00
	<hr/>
Total	\$37,900 00
	<hr/> <hr/>

The State Fair exhibition in a general way, excelled all former efforts. Owing to the frequent excursions at very low rates during the campaign season to the capital city, and the wet weather on the principal days of the Fair, the receipts did not meet expectations, as compared with recent years. Hence the showing with the "balance on the wrong side."

There is no change to report with the guarantee claims, nor any litigation or protests.

The Lecture Room of the Board is appreciated by the industrial associations. The meetings continue to increase, and their importance recognized far and near. Their proceedings, as published in our annual report, assist greatly in the good work, and have created a demand for the reports, eliciting many favorable comments.

The work of the Board is almost unlimited in promoting the agricultural interests, and the office business is largely increasing each year.

The museum of agricultural products is a success, and although not complete, bids fair to be one of the main attractions of the State House.

The past season has been one of remarkable prosperity to the agricultural community, and was the most productive, taking into consideration all the cereals and other vegetation grown.

With pleasure, I acknowledge the kindness and courtesy received on every hand.

Respectfully submitted,

ALEX. HERON,

Secretary.

Treasurer Johnson submitted his annual statement of receipts and disbursements, as follows :

TREASURER'S REPORT.

Mr. President and Gentlemen :

I have the honor of submitting to you the following report as Treasurer of the State Board of Agriculture for the year ending December 31, 1888 :

RECEIPTS.

Cash on hand January 1, 1888	\$8,415 14
Received from all sources during the year	32,151 09
	<hr/>
Total receipts	\$40,566 23
	<hr/>

DISBURSEMENTS.

Cash paid on general orders	\$30,457 54
Cash paid on premiums on cattle	2,026 60
Cash paid on premiums on horses	3,466 00
Cash paid on premiums on sheep	583 00
Cash paid on premiums on hogs	821 00
Cash paid on premiums on poultry	321 00
Cash paid on premiums on dogs	107 00
Cash paid on premiums on agricultural products	415 50
Cash paid on premiums on horticultural products	774 00
Cash paid on premiums on geology	131 00
Cash paid on premiums in Woman's Department	1,092 50
Cash paid on premiums in Children's Department	107 00
	<hr/>
Total disbursements	\$40,301 54
Balance in Treasury	264 69
	<hr/>
Total receipts	\$40,566 23
	<hr/>

All of which is respectfully submitted,

SYLVESTER JOHNSON,
Treasurer.

The reports of the Secretary and Treasurer were referred to the Finance Committee.

The president announced additional standing committees:

On Fair Grounds—S. W. Dungan, R. M. Lockhart, E. B. Gerber and Col. I. B. McDonald.

Premium List—J. Q. A. Seig, W. A. Banks, B. B. Beeson and Joshua Strange.

Rules and Regulations—Dick Jones, E. H. Peed, D. R. Monroe and Fielding Beeler.

The president appointed Messrs. W. H. Ragan, R. M. Lockhart, W. B. Seward, Dr. R. T. Brown and J. B. Smith as a special committee to draft resolutions on the death of Dr. A. C. Stevenson, an ex-president and old member of the Board.

General Superintendent, R. M. Lockhart, submitted his annual report.

REPORT OF GENERAL SUPERINTENDENT.

To the President and Members of the Delegate and State Board of Agriculture:

GENTLEMEN—I have the pleasure of making to you the following report of the work done under my supervision during the year 1888: I presume that almost every one present is aware of the fact that at the January meeting of 1888 I was directed to improve our Fair Grounds by inclosing the twenty acres of land that had been purchased by the Board immediately adjoining on the north, construct a new race track, grand stand, and make many other needed changes, consequent to the adding of this additional ground to our heretofore limited space. The first work of the season was the taking down of the old amphitheatre, the material of which was used during the season in the construction of other buildings. As soon as the ground was dry enough to permit work in the spring the stables on the north line of the grounds, 1,200 feet in length, were moved, a portion being placed on the east line on Central avenue, a part on Fourteenth street, and the remainder on the east bank of the State Ditch on the new purchase. These stables were all refitted, and will be serviceable for use by the Board for a number of years.

The dwelling house near the center of the grounds, occupied by the janitor, was removed to a new location southeast of the Exposition Building, and refitted in a manner to make it respectable in appearance and comfortable to the occupants, at a moderate cost. The addition of the new grounds required the construction of a fence on the north side, which was done in such a manner as to save a great expense in the paling of the grounds. A new fence was also constructed on the east side south of the stabling, and made ten feet in height. In addition two or three wires were put on the top of all fences to prevent persons from climbing over them. Several buildings were moved and relocated, which gives the grounds a much better appearance. Eight new driven wells were put

down, which gives us an abundance of good water in every department. A bridge was also constructed across the State Ditch for the accommodation of the cattle men.

It is scarcely necessary for me to speak of the new race track and grand stand that was constructed during the season, as so much has been said about them by the press of the city and State. Suffice it to say that it is conceded by the best horsemen of this and other States that have visited our grounds during the past fall that there is not a better half-mile track or more conveniently arranged stand to be found anywhere. But as the track is just newly made the action of the present winter on the soil of which it is composed will make it necessary to do a considerable amount of work on it in the early spring in order to maintain its good repute among the horsemen. It was expected early in the spring that a large number of new machinery halls would be erected on the grounds during the summer, and leases were made out for several firms. But only three buildings were erected. The others asked to be allowed further time, as the wheat crop in many parts of the State was a failure, which materially affected their trade. There are now applications for all the available space, and if the firms that made application for space last year are not prepared to build this year, I would advise the letting of the spaces to other parties.

A substantial fence has been built on the inside and outside of the race track. New roofs have been put on Machinery Halls Nos. 1 and 2, and the roof of the Exposition Building and also the towers have been thoroughly painted. It was intended to place eave-troughs around the entire building, but on account of lack of funds the work was postponed. The old rickety gates and tumble-down fence at the east end of the main building were removed, and in their place are constructed structures that are convenient and ornamental.

It is hardly necessary for me to recommend that other work should be done on the grounds during the coming season, as I am aware of the fact that the Board is entirely out of funds with which to do much that is an absolute necessity. But should the Legislature see fit to give the Board the financial support that it is justly entitled to I have no doubt about it being applied in a proper manner in the construction of several halls and additional stabling, which is so badly needed in order to make the work of the Board a success. The location of the reducing station of the Citizens' Gas Trust Company, at the northeast corner of the grounds, is a grand thing for the further success of the Board, as the contract made with them gives the Board the use of free gas during each of our State Fairs for the running of machinery and for lighting the grounds at night if wanted. The opening of two double lines of street railway to the grounds during the past year gives assurance of all needed facilities for the transportation to and from the grounds of at least 50,000 people in any one day.

When I accepted the position of Superintendent last January I did not think it would take more than fifty or sixty days of my time to superintend the work of the season, but between the first days of April and November I put in 140 days. How well I have met the expectations of my fellow-members of the Board in the work done is for them to say. I believe the work done and the many needed changes made have met with the approval of the general public.

Before closing my report I wish to say a word for the janitor of our Board, Mr. Lewis Grim. He has been with the Board in that capacity for nine years. I think he is one of the most efficient men I have ever met. I know that he has guarded the interests of the Board faithfully, and I believe the Board is not paying him what his services are worth. An additional amount should be paid him, as his entire time is taken up, summer and winter, in the work of the Board.

With kindest wishes for each member of the Board, the above is most respectfully submitted.

R. M. LOCKHART,
General Superintendent.

The General Superintendent's report was referred to the Committee on Fair Grounds.

Mrs. A. M. Noe, President of the Woman's State Fair Association, presented the following address:

REPORT OF THE WOMAN'S DEPARTMENT.

The report of the Woman's Department for 1888 could be summed up in one word, success. From the date of the organization to the present, every year has been one of growth and improvement. It would not speak well for the management were it otherwise. The experience of each year should broaden our plans and give us a clearer conception of what a fair should be, a better knowledge of the needs of exhibitors and more artistic taste in arranging the exhibit. That a growing interest is being taken in this department is manifest in the large number of letters received from all parts of the country by the Superintendent and Secretary, asking for information in regard to the management of it and the fact that eight States were represented in the last exhibit.

At the annual meeting in November of the International Association of Fair and Exposition Managers so much interest was taken in this phase of fair work that a committee was appointed to recommend what per cent. of the premium appropriation should be offered for woman's work, which shows that we are gaining a national reputation, thus realizing the hopes of the organizers of our Association that it would be wide-spread in its helpfulness for women, and that the Indiana State Board of Agriculture would become renowned for its recognition of the ability of women.

That this Department is one of the best drawing cards for a successful fair is no longer a disputed point. For where a man's wife, sisters or daughters go, he is sure to follow. In fact, the masculine part of the community no longer look upon the beautiful work of woman's fingers as an extravagance or an unnecessary waste of time and money, for they are beginning to realize that whatever beautifies the home enhances the higher senses and makes the lives of its inmates purer and better.

Committees were sent to the Centennial Expositions at Columbus and Cincinnati, Ohio, in the interests of our Woman's Department. To their surprise they found that although an extra effort had been made to gather fine exhibits, as it was their Centennial year, in neither place could the exhibit begin to compare in quantity or quality to that we are able to show every year. No attempt had been made at classification, and the arrangement was inferior in every respect to the Indiana Woman's Department. When the lady commissioner from Cincinnati, Mrs. Peasley, visited our Fair, though we realized that our building would bear no comparison to theirs, it was with commendable pride that we listened to her expressions of wonder and surprise at the magnitude and excellence of our exhibit and its almost perfect system in its arrangement and management. Could you, gentlemen of the State Board, have heard her commendation of your liberal appropriation and confidence in the ability of women to manage the Department, I am sure you would have been as proud of yourselves as we were of you, for the commissioners of the great Cincinnati Exposition made no specific appropriation for its Woman's Department.

It was deemed advisable, on consultation with your Executive Committee, to purchase new decorations this year. The bright and beautiful colors and the artistic draping of the same did much to hide the unfinished condition of the building and added to the beauty of the exhibit. The Art Department was a marvel of excellence. This has been one of the most difficult to manage in the entire fair. It has been the purpose of the Association from the beginning to discourage a low standard of work in all departments and encourage real art, whether it be done by needle or brush. In this department the improvement has been wonderful, and a large per cent. of the work exhibited would have compared favorably with any art exhibit in this country. Under the able management of Miss Mary Heron the small difficulties, that had so often perplexed us, were almost obviated.

On behalf of the Association I take this opportunity of publicly thanking the judges for the faithful discharge of their arduous duties. We can truly say that each year the number of exhibitors who are disposed to complain at not receiving premiums is growing beautifully less, thus showing an increased confidence in the Association in its efforts to secure competent judges.

As will be seen by your Secretary's report, the receipts of the Department were not as large as they were last year, owing to the facts that some of the exhibitors who make large and beautiful displays complain that cheap, catch-penny sales-stands marred the effect of their exhibits, which is true, and the demand for space, which increases every year, and that the Superintendent has always been advised to not crowd exhibitors for the sake of sales privileges, gives the explanation.

We labored under great disadvantage this year, owing to the sudden death in the family of two of our Department Superintendents, when their departments were but partially arranged, and the illness of the Express Department Superintendent, a department so difficult to manage that it needs the experience of one or two years to understand it. Without the thorough training our Superintendents had and their knowledge of the work, the absence of these three Superintendents might have been a great detriment to the Fair of 1888. But with this training each one was able to do a share toward filling the places of the absentees. Death

has again entered our ranks and taken one of our most efficient and willing workers, one who was ever ready with cheering word and helping hand to take any additional work, if by so doing she might assist others. The Superintendent always found her ready to carry out all plans of work suggested. We feel that we have sustained a great loss in the death of Mrs. Josie Swift. May we emulate her example, doing all our hands find to do, and be as helpful to others.

In regard to the question of the Fair being open at night, we still think that with the proper amount of advertising and special attractions and an increased interest on the part of the State Board itself, it could be made a success.

With thanks to my co-workers for their faithfulness and kindness, and to the gentlemen of the State Board for the confidence and liberality extended to us, I return my sincere thanks and that of the Association.

Mrs. H. L. Seward, Secretary Woman's State Fair Association, submitted the following report:

There are a few other points in connection with our work which might be spoken of with profit. Concerning the annual fair of last year, I wish to say that the entries were greatly in excess of any previous year, and seven States were represented. We thought 1,500 entry cards would surely be sufficient for our Department, but lacked several hundred, so that for next year we shall need 2,000, at least.

Every entry was made by Friday night, so that devoting Saturday to the arrangement of the exhibit, our part of the Fair was ready for inspection Monday. Every department was full of choice work, the express being very large. This is a fulfillment of the efforts of our association to bring out work from every part of the State, and so make it truly a State Fair.

The Art and Culinary Departments showed a decided advancement, both in grade of work and size of exhibit. As our President has spoken of the art, I will confine myself to the culinary, where, to tell the truth, I am more at home.

In the midst of so much beautiful work in art, embellishment, etc., don't let us forget how important it is to encourage the well doing, the plain, commonplace things of the world, for these make up the sum of so many lives. These plain, common things are a sort of solid foundation, without which any life is incomplete.

Great possibilities lie hid in a lump of dough. I may mean a healthy digestion, consequently a clear brain, consequently good work done for the world, or it may repeat in our day the disasters of Waterloo, which was lost by the great Napoleon as a result of indigestion, brought on by eating sour bread.

I think it will never cease to be one of women's duties as the home-makers, to superintend, if not to actually engage in the work of the kitchen. I, for one, have no sympathy with any movement for the advancement of women which overlooks or slights her commonest humble duties, and I believe that a woman is just as thoroughly a woman, that she is just as much in her sphere, that she wields just as great a power for good when she holds her frying pan, as when she stands on the platform, and that both are equally dignified and adorned by her presence.

So, in our fair work let us encourage the culinary and sewing.

In regard to our work in general, we feel sure that it is growing. We are trying to introduce the system of expert judging into the Woman's Department of the various County and District Fairs, and with great success. The idea was originated several years ago, and has gradually grown until last year we had twenty-two applications for expert judges, all of which we were not able to supply, because many of the dates conflicted, and because the Secretaries of Fairs where they wanted expert judges failed to notify us in time. In every Fair where this system has been tried in the Woman's Department, it has met with the same approval, and success, as in the Live Stock Department. In County Fairs ladies often refuse to exhibit because of the favoritism shown in judging, and it is an extremely difficult matter for a judge to decide fairly as to the respective merits of a quilt made by Mrs. A and one made by Mrs. B. When Mrs. A is her dear friend and Mrs. B has lately to your positive knowledge said some very disagreeable things about you. The gossip seems to act as a magnifying glass on the defects in Mrs. B's quilt, and the decision in nine times out of ten goes to Mrs. A. But when a stranger is the judge, this difficulty is obviated, and the merits of the two quilts stand an equal chance in her eyes.

I hope each member here will take this thought home with him, and work it out in the fair with which he is connected.

Our work is broadening each year, and we don't expect to rest till women have charge of their own work in every County or District Fair in the State.

Mrs. Ida A. Harper presented a paper on, "Woman's Work," which was well received and a vote of thanks was extended her after its reading.—(It is published in full in this report.)

CATTLE—DAIRY BREEDS.

J. Q. A. SIEG, SUPERINTENDENT.

In this class of cattle the show was a credit to the management and to the State. Among the Jerseys there were 46 entries; Holsteins, 33 entries; Devons, 32 entries, and in herds, where all competed together, there were 19 entries, making a total of 110. While the competition was sharp, the best of feeling among the exhibitors prevailed, all yielding gracefully to the decisions of the experts and committees. The only complaint that was made was about the difference of money that was allotted to the aged and the young cattle, a great many exhibitors claiming that there ought to be no difference made on account of age, but that all in the same class ought to receive the same money or nearly so. That the present system encouraged only the exhibition of aged cattle, while the young, on which the future depended for improvement, were not properly encouraged. Consequently, in the young rings the show was not what it should have been, but was very light

and not of good quality. The only difficulty that was experienced in showing was on account of exhibitors not having their entry cards exposed, so that the stock could be speedily arranged, and I would recommend that the Board adopt a rule requiring persons bringing stock into the ring to compete to fasten the entry card to the rope with which the animal is led, so that there will be no running back to the stalls or hunting up the owner of the stock, in order to get the cards so that the stock can be arranged for exhibition, which is very annoying and consumes valuable time.

CATTLE—BEEF BREEDS.

ROBERT MITCHELL, SUPERINTENDENT.

The cattle exhibit at the State Fair of 1888 was a marked improvement over former years. The quality of the cattle was exceedingly fine, and the show animal of the present must have *quality* when it comes under the critical eye of a good judge or it will be passed by. The experience of the oldest and most successful exhibitor is put to severe test in fitting animals for the show ring. A little too much fat or not enough is the perplexing question. It requires a trained eye to decide when the show animal is at its best; also, much depends on the kind of feed used to make a smooth, fine handler, or, in other words, a finished animal for the show ring. The expert system of judging was adopted by our State Board at the last State Fair, and the judges selected to pass upon the class exhibits gave fair satisfaction; and the same system is worthy of another trial. Yet it is going to be a very difficult matter for Boards of Agriculture to get competent men to serve in that capacity. In the herd and sweepstake awards some dissatisfaction was evident, yet those defeated accepted their defeat in good humor and in a spirit of friendly rivalry. There were forty-eight head of short-horns on exhibition, drafts from the herds of Messrs. Wilhite, Frazee and Baugh, of Indiana; Mr. Rennick, of Kentucky, and Mr. Herm, of Illinois. Three very fine three-year-old short-horn steers were exhibited by Martin Cutsinger, of Johnson County, Indiana, and lately sold in the Buffalo markets at \$8.00 per 100 pounds. Average weight at time of sale, 2,223 pounds, bringing per head \$177.84. Such steers not only speak for the feeder and breeder, but also for the State. Forty-two head of exceedingly fine Herefords were shown by Mr. Earl and Messrs. Fowler & Vanatta, of Indiana, and Mr. Henry, of Illinois. Twenty-four head of beautiful Black Polls were exhibited by Mr. McKay, of Indiana, and Mr. Garringer, of Ohio, making in all 117 head exhibited in the beef classes. The trouble experienced heretofore by the cattle exhibitors in crossing the race track has been remedied by the rearrangement of the grounds, which was very much appreciated by the exhibitors, and the only complaint by the exhibitors of cattle was against a show tent located close to the cattle ring, much to the annoyance of visitors and exhibitors.

HORSE DEPARTMENT.

W. A. BANKS, SUPERINTENDENT.

The erection of stalls as proposed by the Board at the February meeting was not carried out, and was a disappointment to the exhibitors. I would recommend that the stalls be built in sections on the ground north of the amphitheatre as soon as practical. The custom of allotting stalls before the Fair opens, I think, is a mistake, as it leaves a good many stalls vacant. Some engage stalls and do not take them, while others engage a certain number of stalls and occupy a less number; we had to send several horses to the city for stabling, and others did not enter, as we could not furnish them stalls. Near the close of the fair we had vacant stalls that we could have allotted them when they came on the ground. In fact, we could have accommodated nearly all and have been several dollars ahead. Some plan should be devised to obviate this.

SHEEP DEPARTMENT.

S. W. DUNGAN, SUPERINTENDENT.

The exhibition in this department was above the average. The aggregate number shown was 262. Of this number 65 were Cotswolds, 18 Lincolns, 18 Oxfords, 15 Merinoes, 19 Southdowns, 87 Shropshires. Indiana exhibited 146, Kentucky 15, Ohio 77, Illinois 24. In looking over the report of our State Fair sheep exhibit for the year 1881, we see that Kentucky and Ohio each had about the number of sheep on exhibition that our own State had, but we find quite a change this year, and our State comes up with nearly half of the whole exhibit.

While we would cordially welcome exhibitors from all the States, at the same time we would like to see our own State a *little ahead*, both in numbers and prizes.

Another thing, I noted that every Indiana exhibitor was an active, and I might say permanent, member of the "Indiana Wool Growers Association." This is certainly a flattering reflection on the good work of that body, for, if I remember correctly, not one of them were exhibitors at our State Fair previous to their connection with the Association, and now they are not only exhibitors, but importers as well.

In conclusion I would recommend a change in the classification of our list in the Sheep Department, which will be presented to the Board at the proper time.

HOG DEPARTMENT.

E. H. PEED, SUPERINTENDENT.

The Swine Department of the Indiana State Fair is, without a doubt, the greatest in the United States, and that means the greatest in the world. Especially is that true with the large breeds, and the show of 1888 was, if possible, greater than any that have preceded it.

Our pens were filled to their utmost capacity, and we had to occupy about half of the sheep pens. After using all and more than Superintendent Dungan wanted to give up, we still found that it would be necessary to build some temporary pens, which was done, and our exhibitors made as comfortable as possible. It is going to be necessary to build more pens if our Swine Department increases in the future as it has in the past.

The Poland Chinas were the most numerous, indeed the show was simply immense. The Berkshires were next in numbers. There was a goodly number of Chester Whites. The other small breeds were well represented. The number of entries was as follows: Poland Chinas, 201; Berkshires, 128; Chester Whites, 60; other small breeds, 39; sweepstakes, 123; total, 551.

We used the expert with the score card. While I think the theory is correct, when put in practice it falls short of the mark, indeed it did not give satisfaction to the exhibitors. We used it in 1887, and I thought it would come in general favor with exhibitors, but there was more dissatisfaction this year than last. Besides it is much more tedious, requiring double the time to do the same work that it would require one judge. I would not advocate the picked-up committee by any means, but use the one judge without the score card, as I think it will give better satisfaction to exhibitors and people that want to see the show.

We would suggest that as soon as possible there be some more sheep pens built on the north, and use the south half of the present sheep pens for hogs, as we did this year, but which crowded the Sheep Department too much.

POULTRY DEPARTMENT.

J. A. M'CLUNG, SUPERINTENDENT.

As superintendent of the Poultry Department, I will say that the exhibits were satisfactory, though less in number than last year, consisting of a great variety of breeds. The expert system of judging gave general satisfaction, with very few expressions of dissent in the awards. There was universal good feeling among the exhibitors, and our thanks are due them for their forbearance, close observance of the rules, and courtesy extended to us, as well as to the Board.

Exhibitors have been allowed the privilege of renting coops of the Board or furnishing them, the result of which is a great variety of coops of all kinds and sizes, which has a tendency to lessen the attraction. And, in order to insure uniformity in coops I would recommend that they be furnished to exhibitors free of charge, and in lieu thereof collect one entrance fee at time of making entry of an amount equal to that of the coop rent, which would save the Department Superintendent the annoyance of collecting the rent, as a great many exhibit in other departments and are not always present when this work is being done. Would further recommend that the list be extended so as to include a number of other recognized breeds, with corresponding premiums to those now listed, thereby partially discarding the non-enumerated list.

DOG DEPARTMENT.

GEORGE JACKSON, SUPERINTENDENT.

A marked improvement over last year was visible in everything connected with the Dog Department, the entries, while not as numerous as it was thought they would be, represented well the prominent breeds of field dogs, utility dogs and those used as pets. The quality and breeding of the animals indicated great improvement over the exhibits of a year ago, and in some of the classes known as sporting dogs—Setters and Pointers—the competition was lively and close—participated in by many of the best dogs in the State. The accommodations provided for the comfort of the dogs and their admirers was greatly in advance of any previous arrangement, though not just what was expected, nor was it in the form contemplated by the Executive Board. A large tent, under which movable boxes or stalls were placed, served as shelter from the storm and the sun's rays. The best dog-breeders of the State look forward with interest, anxiously, to a more substantial and permanent connection with the affairs of the State Board of Agriculture, in the occupancy, during fair week, of a neat and appropriate building erected for the purpose. The interest in fine dogs is yearly increasing, and the Board will be entirely justified in doing this. The attendance each day was very large and enthusiastic; the capacity of the tent was often taxed to the utmost to hold the crowd. Tying on the ribbons was an event full of interest and excitement, participated in not only by the owners and exhibitors of the dogs, but by all those present having a warm side for this or that breed; the tiny terrier, weighing but a pound or so, seemed to number as many admirers and to draw as great a crowd around the judges' ring as did the huge mastiff or great Dane, weighing hundreds of pounds. The exhibition, taken as a whole, was a good one, helped out very materially—in numbers and quality of the stock—by members of the Indiana Kennel Club. This association owns dogs representing as much value as that of any similar organization in the country. Many of these fine specimens assisted in making the exhibit attractive. A reason, not before given, for the better quality in the animals, as well as increase in numbers, is found in the advanced scale of

premiums over any previous year. In many of the classes the prizes offered are as generous as those of the average bench show, and no criticism can justly be made, while in others the classes themselves are not so complete, nor are the prizes offered commensurate with the value in which the breed is held. Several of the breeds named in the list had no representative at the show, while others presented themselves for which there was no class, and were consigned altogether to the "miscellaneous," where the perplexing question arose before the judge to say which was the "best," the fox terrier, the pug or the great Dane; there being no manner of competition between these breeds, the judge's decision was meaningless.

Stonehenge, the best authority on dogs, classifies them: First, domesticated dogs, finding their game by scent, but not killing it, being chiefly used in aid of the gun—English pointer; the setter, English, Irish, black and tan or Gordon; the water spaniel and others. Pastoral dogs (some of them are): The collie, rough and smooth; the Newfoundland; the Mount St. Bernard, rough and smooth. Watch and house dogs: The mastiff, English and Cuban; the bull dog and others. Toy dogs: The King Charles and Blenheim spaniels, toy terriers, Italian grey hound and the pug. Quite a number of the different breeds enumerated are correctly represented in the list of prizes for dogs, while others should have a place. The bull terrier, for instance, is not a *bull dog*, nor is the toy terrier strictly a black and tan terrier, and it is scarcely fair to the different breeds to oblige them to compete in the same class, yet the list does this. It has been urged, and with a good show of reason, that prizes should be offered in the puppy classes for dogs of utility and use, and that a separate class for dog and bitch in all the important breeds should prevail. This rule has already been adopted for the setters and pointers, and it ought in equity to be extended, so as to include other breeds of equal value, and in extensive use all over the State.

AGRICULTURAL DEPARTMENT.

WILLIS BLANCHE, SUPERINTENDENT.

As Superintendent of the Agricultural Department, it affords me more than ordinary pleasure to report the space allotted to my department well filled with a superior quality of farm products.

For the first time in many years Central and Northern Indiana met with almost a complete failure in wheat, but the southern portion of the State came to the rescue with as fine a display in quantity and quality as was ever placed on exhibition at the State Fair.

Through the good judgment of a very competent awarding committee, the awards proved very satisfactory to exhibitors.

I can not commend too highly Capt. Woods, my energetic and able assistant.

I feel compelled to call attention again to suggestions of former Superintendents, of the necessity of a suitable hall for the exhibition of farm products. With present arrangements, it is almost impossible to do justice to exhibitors, as well as failing to afford patrons an opportunity to study the products of the State.

GEOLOGY, NATURAL HISTORY, ETC.

S. S. GORBY, SUPERINTENDENT.

The exhibits in this department were very creditable to the collectors who competed for premiums. The exhibits represented nearly every department of Natural Science, including valuable archæological, botanical, conchological, entomological, mineralogical and paleontological collections, and other branches of Natural History.

There was a marked improvement in the classification, arrangement and labeling of specimens, indicating the marked benefits derived from the stimulating influence of premium awards and diplomas granted by the State Board of Agriculture.

The exhibits were all made by citizens of this State, and the exhibitors were principally students and travelers, though there were several collections exhibited by professional collectors, among whom were several gentlemen of scientific reputation.

The collections in this department were exhibited on the second floor of the Exposition Building, which afforded better facilities in the way of space and the distribution of light; and the accommodations in general were better than those afforded on the first floor, where the department has usually been assigned space.

GRAND STAND.

R. C. McWILLIAMS, SUPERINTENDENT.

The running expenses of the Grand Stand included the pay of three assistants for the time, aggregating \$32.25. The receipts you will find in the report of the Treasurer, which I presume will be at your disposal.

I beg to suggest that the public would be greatly accommodated, and the management greatly relieved by increasing the width of the entrances. I also suggest that the coupon tickets be of different colors for each day. I think of nothing else calculated to improve the management. I may add that inasmuch as the Treasurer employed the ticket seller, and reported and settled with him, I did not deem it necessary to keep an account of the receipts.

GATES.

JOHN M. BOGGS, SUPERINTENDENT.

There is nothing new to report in this Department.. The double gates at east end of main building were quite an improvement, giving much greater facilities for entering and getting out than heretofore, thereby doing away in a great measure with the blockades we have had at former fairs.

I would suggest that the Board make some arrangement for the helpers of booths, passing in and out. It might be arranged so they could use the small gate used by Mechanical Department.

Governor Gray addressed the Convention briefly as follows :

Mr. Chairman and Gentlemen of the Delegate Board of Agriculture :

I desire to say that I am happy to meet you and to greet you all at the beginning of the new year. The old one has gone, never to return, and I hope the new year will be as prosperous to the people of Indiana as the old one gone by. I did not know that I was to appear before you until a short time ago. This is, as I have no doubt you are aware, the busiest part of the year with me. For some time I have been busy putting my house in order, preparatory to turning over my administration into other hands, and "shake the dust off my feet." I have had my message to the Legislature to write, and to-day I have had a couple of Boards to attend, and I will merely mention that what I have to say to-day, must necessarily be the expression of such thoughts as are suggested at this time. As I said, I am always glad to meet and mingle with those who engage in agricultural pursuits, and I have been a pretty close observer of the progress and development made by the agricultural occupation of the State. This arises, perhaps, from the fact that I was born and raised on a farm, and occupations, followed in younger days, like religion, stick to us. I must speak here some thoughts that came into my mind since entering this room; as I have said, I have observed the progress that has been made in the cultivation of the soil. I well remember when I was a boy my father hired hands to thresh grain with a flail on the barn floor. Then we tramped our grain with horses. I well remember I was placed on one of the horses to drive them around in tramping out the grain. I remember, too, what a wonderful thing it was when the endless-chain thresher came around, and when the four-horse power. In this the people thought they had reached the acme in the way of threshing grain. But inventions have crept along until you have the magnificent separator, almost to perfection. I am not very old, but I remember, also, when my father reaped wheat with a sickle, and cut one of his fingers off. I remember, too, of carrying water in the harvest field, and looking upon the row of cradlers as they were cutting the grain. It was a beautiful sight. We have progressed, first with the reaper and mower, and now we have the reaper and binder

working almost like a thing of life. I remember the old bar-share plow. We have been advancing and improving until now we have plows on which we may ride while we plow, and sing songs while we ride. I remember the old broad fireplaces and long-handled frying-pans and dutch-ovens which our mothers used in our youthful days, and the old farm wagon, in which we rode to church. They have been replaced with fine buggies and carriages, and all along the line there is great advancement over the old ways and customs of the past. Indiana is moving alongside with her sister States in the development and the amount of manufactured agricultural implements that has been a great convenience, and added much to the wealth of the country, yet I do not know whether the people are any happier than before. But with this development and improvement of the country have come the railway, the telegraph, the cotton-gin, sewing machine, knitting machine and telephone. It is true that all the great improvements and developments of this country, all of the wonderful inventions that have been made owe their existence to the thousands engaged in the cultivation of the soil. Without the occupation of the farmer there would be no use for the reaper or telegraph, telephone, sewing machine or knitting machine, and no towns and cities. If the cultivation of the soil were to stop, all the railway trains would cease running, and towns and cities would wither.

We have a wonderful State—not so large in territory as some of our sister States, but one of the most productive in the Union, occupying a proud position in the sisterhood of States of this Union. And it is all owing to the productiveness of the soil, the industry and skill of the farmer, for without them we could not be such a State as Indiana is to-day, with her 15 colleges, 10,000 schools, 6,000 miles of railway, 25,000,000 rods of tile laid in the soil, 100,000,000 rods of fence that define the boundaries of our farms, 200,000 farms and 220,000 farmers. A most productive State, occupying, as I have said, the proudest position, perhaps, of any State in the Union; and yet did you ever stop to think of it? The occupation of the farmer in the cultivation of the soil is the only business in this country that has to take care of itself. There are no laws which protect those engaged in the tillage of the soil, and no particular aid given to those engaged in it. A company comes along to locate a railway. The first thing they resort to is to ask the county or township through which the road is to run to donate a certain amount of money to aid in the construction of this road, which would come largely from the farmers. If a company wishes to establish a manufactory they want an amount of money given them to help the enterprise. Since God has opened the bowels of the earth and given us gas, they want the gas free and so many thousand dollars for the instruction of the people. Which is well enough. But when the farmer comes and wants a little assistance no one circulates petitions to help him. Yet his occupation is the most useful of any in the country. He must go to work and dig and toil, and strike his own blow, and tax his life to help build rail and gravel roads. There is yet another peculiar feature about it. Farmers are a most unselfish class of people, doing anything to help themselves. They generally follow their business and make a good farm, and improve and take care of their children. These are facts of which I have often thought.

In many of the States there is not even a law to protect live stock against the ravages of contagious and infectious diseases, and Indiana is one of them. I intend to recommend in my message to the Legislature the establishment of a live stock commission that shall have the power to protect the live stock of Indiana against the importation of diseased stock into our borders, that the farmers of Indiana may have that protection against infectious and contagious diseases that some of the other States do not have. I do not think it is worth while for me to undertake to tell you anything about farming, but I will say there are two classes of farmers—theoretical and practical farmers. If all the theoretical farmers were to die to-morrow the agricultural interests would not suffer, and therefore I shall not attempt to say anything on that point. Since I was nineteen years of age I have not had anything to do with farming, but it is all fresh in my recollection and a past thought with me. Now, in conclusion, I hope, as I said in the beginning of my remarks, that the new year just ushered in may be in an eminent degree a prosperous one for the farmers of the country, because if the farmers are prosperous we shall attain to that grand destiny to which this country will finally arrive—the grandest and greatest republic of free men and women that God has every shown. I wish it may be one of health to you and your families and great prosperity.

You have my best wishes in all your undertakings.

A rising vote of thanks was tendered the Chief Executive at the close of his remarks.

The reading of the department superintendents' reports was dispensed with and they were ordered incorporated in the Annual Report of the Board.

The convention proceeded to the nomination of members of the State Board to fill vacancies, with the following result:

2d District—W. W. Berry, Knox County.

5th District—V. K. Officer, Jefferson County.

6th District—Dick Jones, Bartholomew County.

7th District—E. H. Peed, Henry County, and John W. Walker, Hancock County.

9th District—Thos. Nelson, Parke County; J. M. Sankey, Vigo County, and Demsey Seybold, Clay County.

10th District—Jasper N. Davidson, Montgomery County.

11th District—John Graham, Delaware County; N. T. Butts, Randolph County; Robert Simonton and Loyd S. Jones, of Huntington County.

12th District—John M. Boggs, Tippecanoe County.

13th District—Col. I. B. McDonald, Whitley County; B. F. Clemans, Wabash County; Joshua Strange, Grant County, and James McDavis, Clinton County.

Col. I. B. McDonald, of Whitley County, spoke on

“VALUE AND IMPORTANCE OF COUNTY FAIRS.”

The object of county fairs, as I understand it, is to build up the agricultural interest in counties where these fairs are held. Almost all the counties have held fairs every year, except during the war, which were in a measure successful, at least it was so in my county (Whitley). It was a matter which the people went into to help build up the interest of the county. Our women as well as our men took hold of it. The first county fair was held in the Court House and High School Building. The ladies took their department in hand and everything worked nicely. The Court House Square was occupied with implements and machinery, while the Court House was used for grains and various products. This was the first fair held in the county, and was about the year 1856. It continued to build up, and everything prospered as long as we run the fair in that manner, but through improper management gambling crept in. Some wanted to sell the old fair grounds and buy another. The old managers were driven out and others put in who had *horse* on the brain, and introduced speed contests at our fair. We had a lot of tricky horse men who did not want our leading men and farmers to run the fairs, and the result is they have run many fairs in northern Indiana in the ground. We should be plain and practical about this matter and let theoretical views go. The only way to maintain a fair in the county and sustain practical ends, men should have practical knowledge of the operation of common sense. Take hold of the matter and help push forward the great work. If we don't work for the benefit of all classes we had just as well wind up the business. It is difficult to get all to work together in these enterprises, therefore we find that a few men must do the work. The great trouble with our fairs is, too many side shows and places of diversion which detract from the true interest of the fair. County fairs may be so conducted as to do much good if properly managed by a set of men who have the agricultural interest at heart. Then when we come together to hold a State Fair we will have a good fair also. You can not count the dollars and cents, nor tell just what an article will produce, unless you get a good record at home as well as abroad. The only question with me, and should be with you, is that of putting the best men in office in our county as well as our State Fairs. You can not estimate the value of a good fair. There should be combined a great amount of harmony, ingenuity and intelligence to run a fair successfully. In our county we have hard work to get a superintendent to run the fair and keep the people off the race track without incurring their displeasure. I am in favor of exhibiting horses at our fairs, but we should not allow them to absorb the whole attention of the people.

J. Q. A. Sieg—I agree to a certain extent with Mr. McDonald's views, yet he failed to touch upon one important point in connection with our fairs. Now, in every phase of life we have to commence with our A B C, and have to learn them

before we can read and branch out. It is the same in a mechanical way; we are educated up. A county fair that is not an educator is not worth anything to a county. We want to make our fair an educational institution, where our farmer boys may have the benefit of the experience of others. A farmer who seldom attends fairs may have an old horse; he thinks it is the best, and he will stand by it though it may be an inferior animal; whereas if he would attend fairs and see our fine-blooded stock, he would throw aside those old fancies. Young people will leave him where scrub stock is raised, and everything growing out of shape on account of these old notions. They go to the fairs and take their A B C lesson, the consequence is they go back to the farm and talk to the old man on improved farm methods, and perhaps talk him into adopting them, and after a while these young men become the best breeders in the county. Therefore the education that the county fair gives to the people is one of the most important points connected with it. If a county fair has a poor reputation, or has a reputation for bickering, it is looked upon in the line of a poor educator, but on the other hand it becomes one of the factors that elevates the county and intelligence of the good people of the community. It helps the status of the ladies of that community. I do not wish to get on the woman question, because we had that talked of here this evening, which was the best paper I ever heard. If the ladies of the county could be educated up to a point to go out and labor in the families and help in talking these things up, it would add much to the reputation of the county. The reputation of a community depends on the young people growing up. The old people have gone by, but the young people have to leave the impression in the community.

President Smart, of Purdue University—I can say I believe what our friend has said here is true. If we manage our fairs in such a way as to train the young people rightly there will be a great deal of good accomplished. There is much in pride and in locality. I have traveled over this State for twenty five years and as we heard from the Governor this evening, it is one

of the best States in the union. We take the situation of it, the strength of the soil and variety of product, then take also the spiritual condition of the State it is one of the best in the union. Look at the established schools, its fine school houses all over the State; there is no State that has come up so rapidly in the estimation of the people as has Indiana. No one should be ashamed of being a hoosier. Many don't know or are not aware that we have such a State. We need a wholesome State Board. A man who thinks he should go out of the State to find influences that are good should be made to stay out. We have a State to be proud of. We must work to make our county fairs what they should be, and any man who cares for his township, county and State will work for it. We must look to this class of men for our future county fairs. If we have any, let us have the best. It would be better to hold one in three years than not to have one at all.

Mr. Kimmel—I remember the first fair we had in Delaware County and what kind of stock we had then and have since shown from year to year. We all see great improvements and learn better how to manage fairs. We see where we made mistakes and we go to work and rectify them. We change our course of management and so far as our fair is concerned it is steadily improving. Last year we had a grand good fair. We come out and try to teach one another and buy the best of stock and try to improve on them; certainly it is a great institution and improvement to our county. The management of fairs and improvement of the State of Indiana is due largely to the agricultural department. I usually help at the State Fair and I always enjoy it. Some are having good fairs while others are not; but we are looking out for the best interests, and I think we should take great courage and be proud of the State of Indiana and our county fairs. I believe this great interest is growing and increasing and the time is not far distant when Indiana will take its place at the head of all the States in the union. If the Legislature would raise enough to liquidate the debt that is hanging over this board we would rejoice, and our work would go forward better than it has done.

Mr. Smith, Jennings County—I have been identified with county fairs for many years. We have one of the best in our part of the State, but we have gambling which is not an educator in the right direction. A successful fair should be an educator and nothing should be carried on there but what is for the public good. There should be some other way to raise funds for carrying on the work, than admitting gambling on fair-grounds. If we can not have fairs without gambling, I am in favor of discontinuing fairs altogether. I would like to hear an expression on this subject.

Mr. Beeson, Wayne County—While the gentleman was speaking, I was led to ask what constitutes success. We have been running fairs in our county without racing, we were told that we could not, but each year our fair has been growing; several have gone down, while we have been climbing upward. We should make our county fairs an educator and something that is beneficial and of interest to all. We should fight for something better than gambling.

Mr. Lockhart, Dekalb County—I can safely say, that in Northern Indiana we have nothing in the nature of gambling. I am surprised at what the gentleman has said in that respect. The laws of Indiana forbid any thing of this kind. We don't allow any thing that is contrary to the laws of the State. In regard to holding fairs again, the question is: "Of what importance are they as an educator?" Take my county when we held our first fair, (called the Northeastern Indiana) 18 years ago, there was not one pedigreed animal shown. We have since held 17 fairs and they have been worth thousands of dollars to us. Noble County is the same way. There is a class of men who have crept into our fairs throughout the country, who go to our fairs and rob us. These people send out and get premium lists and try to make a circuit and scoop in all the premiums. We want something attractive but these professionals who make a business of going from one fair to another to scoop in the premiums, should be guarded against. There is another thing which people get wild over, that is district fairs. What are they? A number of fairs which are really county fairs are

called district fairs, to make the name sound big when they should be designated as county fairs. We should take more interest in our county fairs and call them such. I believe these meetings we are holding here, if composed of representative men of the county who come here to learn and give evidence of what they learn, they will wield an influence over county organizations for the better.

Mr. —————.—Mr. Lockhart has suggested the name of District Fairs. A few years ago in Steuben County the people would not attend the county fair, but would go over to Waterloo because they held there a so-called district fair.

Some people think there is much in a high-sounding name. Our people think it is best to hold right down to county boundaries. It has been suggested that we make our fairs an educator. In our county we have done this—having established a telephone, we send the news right into the families of the farmers. For the last three years we have had what we call a school day, admitting the scholars and school officers free. We invite them to come in organizations. They have improved lately on that by taking time and get the children to march in procession with banners so they can be seen all over the grounds. We offer premiums for exhibitions. The first year we offered \$25 for school exhibit, the County Superintendent taking charge. It was considerable work, but the show the first year was creditable, and our Board the second year increased the amount to \$50. We not only invite the district schools, but the Normal College. Our fairs under the methods we have adopted are more successful each year, not only as an educator but financially. The people have taken off their coats, so to speak, and work for its success. We are not troubled with gambling, as our police are on the alert.

Dick Jones, Bartholomew Co.—We have had much talk on county fairs. There is a hint I wish to drop here, that is the relation that district and county fairs should sustain to the State Fair. The State Fair should be represented by county exhibits on the State Fair grounds. The State Fair grounds in Ohio have up to this time about eleven county buildings

where they have their county exhibits. They go there to eat their lunch and feel at home. I merely drop these few remarks for you to think about. By stirring this matter up a little, every county might have an exhibit and headquarters on the State fair grounds.

Aaron Jones, South Bend—"The Value and Importance of County Fairs" is, I understand, the question before the house. The importance of this depends entirely on the kind of county fairs you have. A county fair may be held, in my judgment, that would be absolutely an injury to the county in which it is held. It is the kind of fair that signifies its importance. Now, my friends, you must have practical, sensible and everyday men, men who understand their business to manage fairs. This I know to be true, not only in the holding of a fair, but is also true in every department of life. There is one thing in regard to our fairs that impresses itself on my mind that is of as great importance as any other thing. It has been well said that the fair is an educator, but in what direction is it an educator? The spirit of this age is to take a boy and instruct him in agricultural pursuits. The spirit that compels a boy to stay on the farm from year to year, working in the early stages of life from sheer necessity, causes him, after building up and making that farm and getting it in the best of condition, to soon transfer that wealth, knowledge and experience to others. The fair is an important feature in the economy of our country. Now it seems to me that the president, secretary and treasurer of our fairs should be most practical men, and take the reins in their hands in this matter. There is no occupation of higher importance than farming, and we can maintain that position by producing the highest perfection of product on the farm, and then comes the question, how have you produced this perfect article? We educate the people at our fairs in such a way that they can produce the most perfect of its kind. In the agricultural department the same interest and spirit is there as in the manufactured articles on exhibition. I have studied this question and it not only affects the treasury of our fairs, but it affects our real estate.

If we can bring out the ladies we will seek all the time to make it better in that direction. These fair associations, held from year to year, are the means of shaking off the cobwebs, teaching the boys better plans and methods, and bringing in the brain so much needed on the farm to-day. It is needed more than anything else on the farm to-day. We need it in bringing about practical tests. All the questions of commerce enter into this matter. In regard to this question of gambling on our fair grounds, we will not entertain a thought. A clause against such is put in the by-laws and constitution in the northern part of the State, and the gamblers don't trouble us. If you run a fair right you have to bring into activity the minds of the men in the country. Stimulate the people to think how they can best develop any product on the farm, and from my experience they should receive a reward. Let us then stimulate the people to a revival in this work, bring out that idea and cultivate it in the minds of the people and he will feel proud of his State and his own individual ability to help build up these enterprises. This, my friends, should be done in a practical sense with practical men, men who take the responsibility and go down in the recesses of the mind and study out clearly and distinctly how they can bring out this matter and lay it before the board. Generally, a few men have the work to do. Let them think it out, lay their plans before the board and move right along. We have made a rapid advancement in the last 20 years, and the man who lives 20 years from now will see greater advances from what we are now. How are you going to get it? It will be from the brains of the young farmers of this country.

J. Strange, Grant County.—I wish to call your attention to what I have observed in our fairs. I have always viewed these institutions as public educators. One thing I have noticed especially in making our exhibit of cattle, that they are frequently covered up from view; many attending the fair in passing around are deprived of seeing what they want to see. Is there not some way in which this could be remedied—say uncover them either in the morning or evening, so they can be

seen. We want the people to see our exhibits. They pay to see them and should have an opportunity. In exhibiting our cattle to an expert he understands his business; when he looks and feels of that animal he can tell you how it is produced; he knows how it is made. You shorthorn, swine and sheep breeders know what your animals are. If they are for inspection by the public, they should be seen unblanketed. When we make our exhibit, if the public don't see it, how are they to become benefited by such an exhibition?

Adjourned to 8:30 A. M.

JANUARY 9, 9:30 A. M.

The Board met with President Davidson in the chair.

The reports of Committees on Credentials and Premium List were adopted.

Prof. J. H. Smart, by request, discussed the objects and benefits of

EXPERIMENTAL STATIONS.

I will first speak to you a few moments concerning the work of Purdue University and then of the United States Experiment Station.

The University is the Indiana School of Technology. Its purpose is to afford the young men and women of Indiana an opportunity to acquire a good collegiate education in Mathematics, Science, Literature and Art, and at the same time to secure instruction and practice in such lines of work as will fit them to engage in the practical industries of life. The instruction is both theoretical and practical. The usual methods of text-book study, recitation and lecture are employed; but the student is required to put into practice as far as possible the instruction which he receives. He, for example, not only receives instruction in regard to the theory and principles of drawing, pattern making and machine construction, but he is required to make working drawings himself, to construct patterns, to make the castings in the foundry, to finish and set up the machine, and to operate it when it is completed. This combination of the theoretical and the practical, characterizes the Institution.

The Institution embraces six Special Schools and a Preparatory Department, as follows:

First. A School of Agriculture, Horticulture and Veterinary Science.

Second. A School of Mechanical Engineering.

Third. A School of Civil Engineering.

Fourth. A School of Science.

By elections in the Junior and Senior years this school may be developed into:

- a. A School of Biology.
- b. A School of Chemistry.
- c. A School of Applied Electricity.
- d. A school of Literature and History.

In which one or the other of these subjects may occupy the greater part of the student's time.

Fifth. A school of Industrial Art.

Sixth. A School of Pharmacy.

Seventh. A Preparatory Department.

In each of these schools the usual academic studies are pursued with the exception of Latin and Greek. In addition to this, instruction is given in Scientific Agriculture, Veterinary Science, Mechanical and Civil Engineering, Industrial Art and Advanced Science.

Let me explain to you the technical work of the first two years of our School of Mechanics as illustrative of our methods.

The student is put into the shop under competent instruction in bench work, blacksmithing, in foundry work and in machine work. This occupies two hours per day for two school years or seven hundred and twenty hours. Ninety-five per cent. of our boys will in this time become good carpenters, good pattern-makers, good blacksmiths, good moulders and good machinists. They actually do as much in seven hundred and twenty hours as the average boy would accomplish in ten years under the old apprentice system, and are at the same time getting a good college education. Furthermore ninety per cent. of our students do superior work in these various departments.

You ask how is this accomplished. In the first place the boy is instructed in the theory of the work; he is taught in respect to the use of tools; he is then set to work to do the thing himself under competent instructors; no attempt is made to make money out of him. So soon as he learns to do one thing well, he is immediately set to work on another, involving a higher degree of skill. His ambition is aroused because he discovers that he can very soon learn to do a fine thing. Since he has learned to make and use working-drawings, there is an accuracy and a precision about every movement that he makes, and all these things bring the desired result about easily and satisfactorily.

CONCERNING THE EXPERIMENTAL STATION.

Now in respect to our Experimental Station I may say that it was established by the United States Government for the purpose of carrying on experiments in Agriculture and allied sciences chiefly for the benefit of the Agriculturists of Indiana, and for which the United States gives us \$15,000 annually.

Section 2 of the law reads as follows, viz:

That it shall be the object and duty of said Experiment Stations (1) to conduct original researches or verify experiments on the physiology of plants, and (2) animals; the diseases to which they are severally subject, with the remedies for the

same; (3) the chemical composition of useful plants in their different stages of growth; (4) the comparative advantages of rotative cropping as pursued under a varying series of crops; the capacity of new plants and (5) trees for acclimation; (3) the analysis of soils and water; the chemical composition of manures, natural or artificial; (4) experiments designed to test their comparative effects on crops of different kinds; (4) the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific economic questions involved in the production of butter and cheese; (4, 5 and 6) such other researches or experiments bearing directly upon the agricultural industry of the United States as may in each case be deemed advisable, having due regard for the varying conditions and needs of the respective States or Territories.

In accordance with this view, the following departments have been organized, viz:

First. Botanical Department.

Second. Veterinary Department.

Third. Chemical Department.

Fourth. Agricultural Department, Dairying and Stock Raising.

Fifth. Department of Horticulture.

Sixth. Department of Entomology.

It is our purpose to disseminate valuable information. We shall do what we can but it is quite essential that we have the co-operation of the farmers of the State. We will send out bulletins embodying the results of our work, but you must co-operate with us by making actual tests under ordinary farm conditions of the things we suggest. If you shall approve our work we shall be very glad: if you show us that we are mistaken we shall be quite thankful to you.

We come to you and say that we need your help, and without it we can not succeed. We invite correspondence embodying suggestions; we also invite you to state to us any difficulty you find in your work. We will examine into the case and help you if we can.

President Smart then spoke of the deterioration of soils. He thought that hundreds of thousands of dollars were wasted every year by want of proper care in building the soil up. It is very poor economy to take money out of the soil and put it into a bank. This might make rich fathers, but it would certainly make poor sons. The best bank for a farmer is his farm.

He quoted statistics to show that the soil was deteriorating, and said that he thought that the situation was alarming. In answer to the question, "What could be done?" he said that a few years ago much of Prussia was a barren waste, but that the Government established one hundred and eighty experiment stations, and that through the operations of these

stations, and through the influence of Farmer's Institutes, the land has increased in productive power. Much of it produces double what it did twenty years ago.

Messrs. Robt. Mitchell, S. W. Dungan, Beeson, Higgins and Harbison were selected as a committee to confer as to the practicability of the board's visiting in a body Purdue University.

Mr. R. M. Lockhart from the Committee on FARMERS' INSTITUTES reported as follows :

GENTLEMEN OF THE DELEGATE BOARD—All those that are present with us to-day that were with us at the annual meeting in January, 1888, will remember the interesting discussion of the subject of holding farmers' institutes in this State. The discussion culminated in a motion by Mr. Seybold to refer the matter to the State Board proper, with a request that they should take some action in the matter. On the organization of the Board a special committee of three was appointed, consisting of Messrs. Lockhart, Seig and Officer, for the purpose of formulating some plan by which the work could be started in different parts of the State. Your committee prepared what they conceived to be the best plan for immediate work, and had the same published in the Indiana Farmer, believing that to be the best and surest method of reaching every county in the State. The editors of the Farmer published the plan, giving it a cheerful indorsement. By this arrangement it was suggested that the work be taken up by the members of the State Board in their respective districts, advising that at least one institute be held in each district between that time and the first of April.

This duty having been performed by the special committee, each member of the State Board was notified of the action of the committee and left to do as he might see fit.

We are glad to be able to report that a number of very interesting institutes have been held in the State.

Respectfully submitted.

R. M. LOCKHART,
J. Q. A. SEIG,
V. K. OFFICER.

Mr. Mitchell, Gibson County—We held an institute in our county; the first day we became acquainted; and before the evening of the second day you could not get standing room. The farmers attending became interested and in a few weeks wanted another; in fact proposed to hold one monthly. We are going to hold another from the 17th to the 19th of this month. It is a good work for us. We talked up the horse, cattle and hog interest. It is a great incentive and auxiliary to fair work and I think that if we had some means by which this

association could aid in carrying on the work much good might be effected. We are not strong enough in many places; we need help to get speakers to come out and entertain us. Our society is in such condition that we are able to pay the expenses of gentlemen and ladies that we ask to address and entertain us, but there are many societies over the State that are not financially able to do this.

When you get the people educated up in this matter, gambling will have no place at our fairs. We don't have gambling and our crowds and receipts are increasing each year. We had a Baptist minister with us ninety-two years old who had preached the gospel for nineteen years. He said after visiting us: "From this day, if I live, I am going to talk Gibson County fair." If you run a fair in the interest of the best class of people you will have none of these objectional features. If a man smuggles whiskey in as soon as it is found out he is removed from the grounds. The result is people all over the county come up to the support of our work. To make our institutes still more successful we need a small appropriation to send out men to work in this new field. Prof. Smart deserves credit for sending out men from Purdue University to help along institute work as the help we have received from this source was quite beneficial. There are members of this Board who are willing to go out and assist in the holding of these institutes provided their expenses are paid.

R. M. Lockhart, Dekalb County—The question of holding farmers' institutes is attracting much attention throughout the State. I hold in my hand letters from various parts of the State asking that institutes be held. I have talked with Messrs. Kingsbury, Conner and others about taking up this work, and in the report of this committee their plan of work indicated. Now what I want to speak of is the work in my own district, the Sixteenth. We concluded to hold five meetings in my district, commencing at Lagrange. We were assisted by Messrs. Conner, Kingsbury and Prof. Latta. At Haw Patch we had a most profitable meeting. The house was filled at every place

where we held meetings, and especially was it the case at La-grange. I never before knew of so many farmers attending a meeting of this character, and I think there were as many as 225 farmers present. At every place where we have held meetings, the people who attended were interested enough to want another held in their locality. The building of silos and preparation of ensilage was discussed. Prof. Latta discussed the subject of soils. Prof. Webster presented a paper on insects. I never heard better papers read or better attention paid to the reading. Questions were asked and theoretically discussed. The good results of these meetings were followed by other institutes, and a total of eight were held in my district alone. In March I was invited to go to Anderson to assist in holding an institute there. We had at that meeting, with others, Messrs. Billingsly and Kingsbury. We had a grand meeting. We held another there December 19th, last, which was a fine meeting and much interest manifested. I have letters from different localities, including Muncie, Warsaw and Goshen, asking that meetings be held. So we see that much interest is being taken in this work, not only among the farmers, but their wives and daughters are interested also. At Anderson the editor of the *Democrat* had a short-hand reporter who took the proceedings, which occupied two entire pages. However, there is a drawback in this work. We have no money to carry it forward. Prof. Smart can not afford to send out speakers from Purdue on his own account. Mr. Conner and others who attended these institutes paid their expenses. It was a voluntary work. Why should not Indiana be placed on the same footing as Ohio, Wisconsin, Illinois and Iowa? In Wisconsin they have appropriated \$4,000 for carrying on this work. Indiana has started, but, in my judgment, can not run successfully without help. We *must* have some help. We should have a system by which we can carry this work on. At this session of the Legislature we should make a demand for a certain amount of money for the purpose of working up this interest. Mr. Sieg, I believe, is one of our committee. I would like to hear from him.

J. Q. A. Sieg, Harrison County.—I am one of that committee, but have been confined to narrow limits on account of our distance from each other. It is a step taken in the right direction, and if the proper efforts and assistance is put forth in this Institute work it will go a long way towards remedying the many defects in agricultural work. Prof. Smart talked about the deterioration of the soil. By educating the farmer, they learn that it is not best to farm too much land, and, farming a less amount, they do better. We held an Institute in our county and had a good meeting; it awakened an interest to have another. I want to say we have a work to do. The Grange and Farmers' Clubs have done much good. The crops of Harrison County have increased 25 per cent. in the last 15 years, which has been brought about by a better system of cultivation and manuring of our soil; yet our farms are not what they should be to-day. There is no reason why our corn should not be as good as when grown in virgin soil, but there is great reason why they should not be richer. We should not take money out of the soil and put it in the bank. It is "robbing Peter to pay Paul." If you let the money lay in the soil it is safe, but if you take your riches and place them in the bank you are liable to become a bankrupt—your means are liable to get away from you. When the farmer sees this in a proper light, instead of putting money in the bank he will put it in the soil, where it will accumulate. "Where your treasure is, there will your heart be also," and the boys will stay on the farm; but if you put your means in the bank the boys will want to go, too. I want to say to my friends that the Institute is bound to do a great work if it is properly carried forward.

J. B. Conner, Indianapolis—Last year you started out with a vim in this work. If we expect to demonstrate to the Legislature of the State the need of an appropriation as in other States, we must organize as I said last year. I attended seven Institutes last year under the direction of the Board of Agriculture, five of which were in the north part of the State; they were acceptable and topics of general interest were intelligently

discussed. The deterioration of the soil, drainage, and the feeding of ensilage were discussed by the Professors of Purdue. In six counties they were desirous that the work should continue from year to year. I believe you have entered on a work which will second and supplement the experimental station at Purdue. It is a work that lies at the bottom of agriculture and you could not do better than to continue this work.

Mr. Mitchell, Gibson County.—This Board is in such a condition we will be compelled to ask aid. I am favorable to getting money for Institute work, but we must look to our interest as a Board first. I think we should leave this matter in the hands of the Board.

Mr. Works, of Clark County.—We are trying to get a fair ground that will be a credit to the State of Indiana. I have promised to help all I can, and we expect a liberal appropriation for the State Board. Let us not undertake too much. My brother farmers, if you want Institutes until we are in better shape let us come up and make them a success by individual effort. Our own interests demand this. I hope we will not ask for an appropriation for County Institutes.

J. Q. A. Sieg, Harrison County.—We paid the entire expenses, even hotel bills at our Institutes. We think it did ten times that amount of good. If you have a few liberal men they will pay the expenses. Under the circumstance we should not, I think, ask the Legislature to do any thing.

Mr. Lockhart, Dekalb County. Unless we have some organization of this kind we can not do it. Why not have help as other States. While I hold up this plea, I have the State Board at heart as much as any one.

Mr. McDonald, Whitley County.—Two years ago when this matter was before the Legislature if it had not been for the deadlock that occurred at that time you would have your money. There need be no fears because the money goes right back to the people. I think there should be a committee appointed on appropriation to look after this matter. We need this appropriation and would like to have it.

Prof. Smart—I think we should refer this to a committee. This State appropriation is less than other States in an agricultural way. Let this committee look after the matter as it sees best.

The resolution of Mr. R. M. Lockhart that a select committee of three be appointed on "Farmers' Institutes" was adopted and Messrs. Lockhart, J. B. Conner and Prof. J. H. Smart were named.

Chairman W. H. Ragan, from the Special Committee on the death of Dr. A. C. Stevenson reported :

MEMORIAL AND RESOLUTIONS.

Mr. President :

It becomes the painful duty of your committee to formally make known to you the death, very recently, of our distinguished predecessor and former President of this Board, Hon. Alexander C. Stevenson, M. D. LL. D., which occurred at the residence of his son-in-law, Mr. James Bridges, in the City of Greencastle, on Wednesday (January 2) at the advanced age of eighty-six years, one month and eleven days.

Dr. Stevenson was, not only, the last remaining charter member of this Board, but he enjoyed the still greater distinction of having held, as the appointee of Gov. Whitcomb, a position in a semi-official organization under the statutes and organic law of 1816, which prepared the way for the present board, a creature of subsequent legislation under our present constitution. It is also fair to assume that he, as a member of the Constitutional Convention of 1850, and as an earnest friend of agriculture and one of its far-seeing advocates, should have given his influence and the weight of his counsel in support of the liberal provisions of our present constitution for the promotion of all rural industries, including the organization and maintenance of the Indiana State Board of Agriculture.

From its organization, in 1851, to the beginning of 1859, Dr. Stevenson continuously represented his district in this Board, excepting the two years (1855-56) when the late Hon. John A. Matson was its representative. For three years of this time he was its honored President.

Dr. Stevenson was an educated and highly successful physician and surgeon, but his intuitive love for rural pursuits prompted him at a comparatively early age in life to abandon the practice of his profession and retire to the farm, where he first embarked in sheep husbandry. Although very successful in this calling, as the sale of his clip of wool for the year 1853 for over \$3,000 would indicate, he was forced, solely through the losses and annoyance he sustained from predatory dogs, to give up his flocks, which were highly bred, and the most noted of that

day, and embark in the cattle business. In this, as in sheep husbandry, he very soon became a leader. His short-horn herds were noted as not only among the best in the State, but he himself was justly acknowledged as one of the best judges of the points of excellence in this as in other breeds of cattle.

His herds were kept up and constantly improved by selections and careful breeding until 1873, when, through a public sale, second in its results to none ever held in the State, he retired from active life as a professional breeder, though his strong natural affinities, made much stronger by long association and study, ever after held him close to the herds and herdsmen of our State and the Nation.

Dr. Stevenson was a frequent and an able contributor to the agricultural press of the country, his articles taking wide range and scope, though generally having direct or indirect reference to grazing and stock farming.

As a member of this Board, few have served it more ably, and none so long, for, although his official connection with it ceased thirty years ago, he never, during life, failed to hold its best interests sacred to his heart. This fact is well attested through an examination of its records, where may be found, at intervals covering this long period of time, numerous able contributions from his pen to its literature and evidences of his benign presence at its public exhibitions and conventions. Indeed his last public appearance was at the recent State Fair, held in this city, where he might have been seen, with cane in hand, or under the escort of a friend, in buggy or carriage, carefully and intelligently inspecting the various objects of interest, and offering such comments and suggestions as only the deeply concerned citizen could propose. It was extremely gratifying to members of your committee, who witnessed this last public appearance of our old-time friend, that his presence elicited from the Board such cordial recognition, and that he should have been accorded the great distinction of a place in the show-ring among his favorites, the Shorthorns, while the judges were awarding the prizes.

In view, first, of the upright Christian character of the man, and second, of his long, able and faithful services rendered this Board, and to the cause of agriculture in general, and to the Commonwealth as a citizen, we would respectfully offer the following:

Resolved, That a record of these proceedings in memory of the distinguished services, in life, of Dr. Alexander C. Stevenson, and as an evidence of our great sorrow, now that he is gone, be made conspicuous in the annals of the Indiana State Board of Agriculture.

W. H. RAGAN,
R. T. BROWN,
W. B. SEWARD,
Committee.

REMARKS ON THE LIFE OF DR. STEVENSON.

Col. I. B. McDonold—I first met him in 1856. I fully concur with the address and resolutions and hope they will be adopted by a rising vote. The doctor was a grand man and made a record on this earth such as every one in Indiana should be proud to own.

Robt. Mitchell, Gibson County—I do not know how long ago it was but think he was the first important breeder of Short-horn cattle in the State. Dr. Stevenson was the one from whom I took my first lesson in Short-horn cattle breeding; after that we invited him to deliver an address before our county society. He talked not of Short-horns but of stamping out the use of liquor on our fair grounds. And when Mr. Ragan refers to his coming to our ring last fall I wish to say that Dr. Stevenson was there; he wanted to see the Short-horn cattle. A special messenger was sent to bring him out so he could see without being fatigued; he could not walk but was brought in a carriage when he came to look at the cattle; he was astonished and how well he enjoyed it. He sat in the carriage and witnessed the whole exhibition.

John Higgins, Boone County. I cheerfully concur with all that has been said in regard to the greatness and eloquence of that man. I remember when he was invited to our county fair to deliver an address on the subject of Shorthorns. He made a good speech; I never heard a better. I never heard the subject discussed and explained as he did.

R. M. Lockhart, Dekalb County. As to his visit to our fair last fall, I will say that an old gentleman who lives in the city—a Mr. Whitlock—noticed the Doctor, and said: "The Doctor, like myself, will soon go to the other shore. Dr. Stevenson and I were exhibitors at the fair a long time ago. The boys are coming along with the fine herds." Dr. Stevenson was a man I learned to respect, and was one of the first I made acquaintance with in my connection with the State Board of Agriculture and was considered by me as authority on any subject.

W. H. Ragan, Putnam County. Those of you who knew Dr. Stevenson as an occasional visitor at the fair scarcely knew the grandeur of the man. He had a great mind. I refer to the natural intuitive turn of mind to show how valuable a citizen he has been. He has been in our community in Putnam county, which is my home, for many years, and has been an intimate friend from my childhood. He was one of the trustees of DePauw University for a number of years and president of that board. He helped, perhaps more than any other man, to build up that institution, and for a number of years was the only senior survivor on the board. He was a member of the Indiana Legislature, first serving in 1831, as representative from Putnam county. He was a member of the committee who adopted plans for the then new State House, which was located where the present magnificent structure now stands, an edifice of which early pioneers were proud. In various ways he has been a leader, a prominent man who was constantly sought out and placed in the lead, where he belonged. Another remark I wish to make for members of the incoming Legislature, should there be any present. The Doctor said in my hearing, indeed addressed to myself when asked why he left sheep husbandry and took up the rearing of cattle, whether it was as profitable as sheep husbandry: "Cattle gave me less labor in part, but the main reason I quit sheep husbandry was on account of the annoyance by dogs. I could not sleep of nights for the dogs chasing my sheep, until I had to abandon sheep husbandry." This I say to encourage further legislation against the curse of dogs. Certainly no man since the days of Gov. Wright has greater credit in the organization and building up of this Board than Dr. Stevenson. As I have recently gone over the records I find that there were 53 gentlemen with whom he served, including the original Board.

W. B. Seward, Monroe County. It was my fortune to know Dr. Stevenson. In referring back to the original organization of the Indiana State Board of Agriculture, I think I can say that my father was in some measure the originator of the Board of Agriculture. My father had charge of Governor

Wright when a boy, and assisted him in his education and growing time of life. Dr. Stevenson was one appointed among others to organize the Indiana State Board of Agriculture. I do not think the agricultural community of Indiana owe a greater debt or more respect to any man than to Dr. Stevenson. No person has done more to advance agriculture, and particularly advance the cattle interest in this State, than Dr. Stevenson. The farmer and people generally owe him for that, but can only pay by cherishing his memory as long as they live.

J. Q. A. Sieg, Harrison County. I was not intimately acquainted with Dr. Stevenson. I saw him last fall, and when I took him by the hand I felt he was a great and good man. The people of Indiana mourn over him. We in the southern part of the State, cordially indorse the resolution.

The resolutions were adopted by a rising vote.

The Standing Committee on Rules and the Finance Committee reported. The reports were adopted.

A motion was carried instructing the State Board to have printed and distributed at the gates during the State Fair, programmes giving time and place of the exhibitions each day.

Hon. Robert Mitchell introduced the discussion of the subject:

“IS THERE ENOUGH STOCK KEPT ON THE FARMS OF INDIANA TO KEEP UP THE FERTILITY OF THE SOIL?”

The question of fertility of the soil is one that needs careful consideration at the hands of the farmers of the State. The wealth of the coal fields of any State is estimated by its output of coal in manufacturing cities. The wealth of such manufactories is measured by their output of manufactured articles. The agricultural wealth of a State is estimated by the output of wheat, corn, oats, pork, beef, wool, poultry, fruit and vegetables. Now, the question is, can Mother Earth continue on giving to the husbandman such lavish gifts without being reimbursed in a substantial way. So I come now to the subject, is there enough stock kept on the farms of our State to make manure sufficient to keep up the fertility of the soil? The answer to the question may be put down, No, not one-half! Then, if there is not barn-yard manure enough, resort must be had to other ways of keeping up the fertility of the soil. Among the best and cheapest fertilizers for the farms, none is better than red clover. When clover seed is selling at \$4.00 per bushel, it

will cost fifty cents an acre to seed your wheat fields. A common practice with the best farmers of Southern Indiana is to sow all the wheat fields to clover, and if the season is favorable to the growth of clover, by the time the fall plowing begins a rank growth of clover is ready to be turned under for fall seeding for wheat. The heavy growth of clover thus turned under each year for a few years will increase the fertility of the soil much cheaper and the benefits will be almost equal to a good spread of barn-yard manure. The next best way of keeping up the fertility of the soil is by a rotating system of crops, say corn after clover pasture, wheat after corn, and clover again after wheat. If this system of rotating crops is adopted by the farmer, his lands will improve in fertility. A third plan of keeping up the fertility of the soil is by the use of active fertilizers, such as lime, bone-dust, dried blood, and other chemical preparations. These active fertilizers are for the immediate wants and benefits of the crops they are sowed upon, and will give good crops, but as a rule do not contribute a lasting benefit to the soil such as clover or barn-yard manure. Well do I recollect when a boy on my father's farm in Scotland, how he would make us hustle around and gather together all of the droppings of the stock about the barn-yard, and carefully pile it up for future use. The Scotch farmer looked upon the size of his manure pile with as much pleasure as a good bank account on the credit side of the ledger. I also recollect when I came to Indiana, thirty-seven years ago, and it amused me very much to see the average Hoosier farmer at that time, when his horses could no longer get into the stables for the manure pile, go to work and tear down the old log stable and build anew, rather than clean the manure out of the stable. Quite a change, however, is come about now in Indiana. The old log stable is replaced by substantial barns, and the thrifty farmers can be seen at all seasons of the year, not only saving all the manure carefully, produced on the farm, but at leisure times his teams are busy hauling all the manure he can get, for well he knows now that a liberal supply of good manure is the farmer's best friend.

Mr. Hendry. I wish to make an inquiry as to the growth of clover from the seed. We sow in the spring on wheat and sometimes fail. I want to know the best method to proceed to get a good stand of clover.

Mr. Mitchell. We have been quite successful with our clover. If sown too early and there should come a little mild, warm weather the germs will sprout, and then should it freeze you are apt to lose seed. This is something we must watch. We get a growth from 12 to 15 inches high, then turn it under and put in wheat. Keep this up from year to year and the soil will improve all the time. After the hard freezing is past is the time to sow. We don't seed quite so early as formerly; the plant is easily killed in the bud.

Mr. Hendry. The trouble with us has been not only with freezing, but dry seasons. The young plant dies out, as it has nothing to keep or sustain it. We have adopted a different method from that practiced formerly—that of dragging the wheat with a common harrow. By this method we put the seed a little deeper in the soil, and think it better. A few years ago when the winters were milder than now we sowed on the snow and succeeded very well, but our method now is to drag the ground with a common harrow, thereby loosening the soil, and it is thought by most that it also prevents drying out. The seed takes hold better and will stand a drought better.

Mr. Works. I used to sow during the first week in April, and I lost much seed. I now sow on limestone land in February. If the clover comes up and don't freeze in the bend it lives. I am well pleased with what I have heard on the subject of clover. My best success in following clover is first wheat, then corn. This is a question we should all study. In red clay land it does not do for me to follow clover with a corn crop.

Afternoon Session.

The Board met, Hon. Jasper N. Davidson presiding, and proceeded with the election of members of the Board in districts where terms had expired or resignations were proffered, with the following result:

- 2d District—W. W. Berry, Knox County.
- 5th District—W. K. Officer, Jefferson County.
- 6th District—Dick Jones, Bartholomew County.
- 7th District—E. H. Peed, Henry County.
- 9th District—Thomas Nelson, Parke County.
- 10th District—Jasper N. Davidson, Montgomery County.
- 11th District—Lloyd S. Jones, Huntington County.
- 12th District—John M. Boggs, Tippecanoe County.
- 13th District—B. F. Clemans, Wabash County.

The Committee on Fair Grounds reported indorsing the work of the Board in making the extensive permanent improvements on the grounds during the past season, and heartily approved the suggestions of the General Superintendent to further improve the same whenever the State Board feels itself financially able to continue the good work to its final completion. It also commended the work of janitor Louis Grim, who has charge of the Board's property on the grounds. The report was adopted.

The Special Committee on the President's Address reported recommending that the suggestions contained therein be referred to the Executive Committee of the State Board. It was so referred.

Mr. Mitchell, from the Special Committee, reported it impracticable for the Delegate Board to visit Purdue University in a body, but recommended each member of the Board to pay Purdue a visit at some time during the year.

Mr. J. Q. A. Seig opened the discussion on

“HOW CAN THE SOIL BE MOST PROFITABLY CULTIVATED?”

He said:

We are not all situated alike, and some want to raise different products from others. Some want to garden and realize as much or more from that garden as from general farming. Therefore, this subject would take just as many questions and answers as localities in the country. The question once was, “The way to resume is to resume,” and the way to raise corn is to raise corn. We must bring the soil up first to the proper condition. If you don't do this you will lose, and your soil will deteriorate. There are many ideas going in regard to this question. One is, How can we tell the soil is becoming exhausted? It is found by different cultivation and climate. We say when the soil is going down it is tired of work as we are when we follow one kind of work a long time. Land sometimes when worn out needs rest. We must rest it if we farm profitably. We should have a rotation of crops. There

are different ideas as to this rotation. We should come together and compare notes about our methods of cultivation and the kind and quality of the crops we raise. I have to confine my operations to the kind of soil in my county. You in the north part of the State confine yourself to the prairie, and we to the upland, and yet in that kind of soil the question would be how to farm in one and how to farm in the other. My idea in this is, we must take our surroundings into consideration and seed our land in that which will bring the most money to the acre. We must know how to keep the soil productive and not let it run down, or else we will lose. In our part of the State we use commercial fertilizers, and we use barn-yard manure, but we can't get enough of it.

Whether it pays to haul manure from the city I can not tell. It will take 48 cart loads of that kind of fertilizer to cover one acre of ground, and if you are three miles from the city and haul four loads a day, and your expenses are \$4.50, at this we all know it don't pay, therefore we should look in another direction and get a cheaper way of increasing the fertility of our soil. We use all kinds of fertilizers; some use bone meal, while others use superphosphate. About fifteen years ago there was an organization in our section known as the Farmers' Club, which did much good in the way of advocating commercial fertilizers. Our wheat crops had run down to eight bushels per acre, and we could not make money raising wheat. Some thought it paid while others did not, but since we gave these fertilizers a trial we are largely increasing the yield of our crops. After using these fertilizers the ground that is hard becomes of a fine appearance, and we raise better corn than we did formerly. We have got to use fertilizers that will increase the product of the soil and increase the fertility. We have got to experiment, and if we get the proper fertilizer it will do good. Some of those fertilizers have more acids than others and you have to determine this matter. On our table land we use bone dust, while in the valley phosphate. We have to determine this by practical experience. We have to ascertain what our soils need. You get the bone on the

cattle from the soil and you must put the bone back in the soil. We apply these fertilizers with a drill as we sow wheat, having a box on the drill especially for that purpose, and the same way with the corn drill. It saves much labor. Every man who sows wheat sows his fertilizer. Every farmer should keep a book account of his work, and then he can tell whether he is farming profitably or not. Many farmers sit in the house and say, "My farm don't look well, but I will not do anything to-day." The farm is going down all the time, but when you see an improved farm the owner measures and drives his business. It is the same way with every other kind of industry. The boy who plows the farm don't need to use much muscle, neither does he when he puts hay in the mow with the fork, but he has to use brains; it requires more brain than muscle. The time was when it required more muscle than brain, but it is different now. The farmer of to-day should be the most intelligent man on the face of the earth, because he comes in contact with these things all the time, and if he don't look at this matter right he should go in his house and stay until death comes around to relieve him of his burden.

"TRADES AND PROFESSIONS CONNECTED WITH AGRICULTURE."

Mr. Aaron Jones. I was on the programme to prepare an article on this subject, but I must say that I have no paper to read. I take it that I am not to speak of the kindred associations of agriculture, because you have men that will bring out these, but there are some things which have direct reference to agriculture, standing hand in hand and promoting the interest of all. Among the first I wish to mention that of tile-making. The manufacture of tile to-day has an influence to build up the best interests of Indiana. This question of making tile is opening and thoroughly revolutionizing the soil in the State of Indiana. We have but commenced in this process; it is going on and spreading until it has confronted nearly every agriculturist in the State. Another interest is that of the manufacture of farm implements. We have these agricultural estab-

lishments in various parts of the State, which are turning out implements and machinery which greatly lessen the expenditure of muscle. We have divided and do divide the people of our country, and right here let me remark, the very fact of dividing up the industries and pursuits is going to make this nation in all respects a great power. This division and diversified industry which prompt each other is one we have got to solve in this the nineteenth century. These manufacturing establishments make articles which we need on the farm, and are affording us much we have a market for. Hence I regard these as the primaries of the agricultural interests of our country. Another industry is the great transportation and commercial lines of our country; these are alive to agriculturists and agricultural interests. There is, perhaps, no question but these lines of transportation spreading out through our State, increases the value of our farms largely. Now there is no other branch, than this one thing, the trades and professions help build up in the agricultural industry. I have not time allotted me (ten minutes) to discuss this question thoroughly as it should be. There is one other matter of which I wish to speak, that of the legislature working for the interest of the farmer. To-day we want to ask our legislature to pass such measures as will promote the great interest of agriculture.

First, we would say give us a good, clear and liberal appropriation to build up the agricultural school of Indiana, making it more useful and important to the citizens and farmers of the State. The Legislatures in the past have given us some good laws in the way of agriculture, such as drainage, from which some of the most worthless lands have become the best in the State. They want to supplement further on this question so as to reclaim many of the unclaimed and unsettled places of our State. There are some localities which require drainage, the cost of which would be so great that it can not be done by individual effort, such as cutting out and straightening some of the rivers in the northern part of our State, the removal of the dam at Momence, and bring into cultivation the swamps

of the Kankakee. This, if it were done, would almost revolutionize the State. My land don't need draining, but I am favorable to paying my proportion of the tax required for this for the pride I have in the great State of Indiana; and further, if this land should be reclaimed and made productive it would increase the amount of taxes and thereby lessen my taxes. The farmers of this State should say something on this question. There is one thing, the Legislature should take a strong stand upon and pass laws that are practical, and should be enforced. The farmers of Indiana have by previous taxation built up highways all over the country. We have also labored hard to build up railroad companies, and they should help us pay these taxes to build up public highways. The time has come when the Legislature should exercise its rights to come to the management of these roads. So far as public interest is concerned it should pass laws giving us reasonable transportation over railways. We should have the passage of just railway laws equalizing the rate of transportation on all our lines, which we have a right to have. It is unjust that we should pay a higher rate to one company than to another. We want to say that we have made your roads by the products of our farms. You know and I know the value railroads would contribute in the commercial centers to those within if the prices were good. The Legislature should fix just and equitable laws regulating this matter. When we have done that this Legislature will be legislating for the interest of the agriculturists of the State, building up the great agricultural interest, which is the principal of prosperity of the State and of the nation.

As we prosper the agriculturists grow strong; they spend their money with a wise hand, surrounding their homes with luxuries, building up the intelligence of our country and agriculture, cementing and making strong the great fabric which no politician or demagogue can shake. We will go on from year to year making this country the greatest of all the countries in the world, one to which other nations will look to and

model after. And it seems to me you who represent the Board of Agriculture should lead the way, direct and say what we need and what we want.

Prof. Smart. Another thing is the idea of keeping a book account of results, which will be found of practical importance to farmers.

Mr. Seig. The first farmers' club in our county we caught on to that idea. I was secretary and corresponded with the Commissioner of Agriculture at Washington. From the Department of Agriculture we received many seeds, which were distributed, doing much good. We had garden products in abundance. There were 20 members in that club. We hired a boy to haul our produce to Louisville, and we sold garden products to the amount of \$200 a week. We continued hauling to the city for two years. This was all done by concert of action.

Prof. Smart. I was told that in the vicinity of Knoxville, Tenn., that they used pure potash as a fertilizer and the crop was doubled in quantity. It would be well for some of us to try it. I do not know how much they apply to the acre. It was tried as an experiment.

J. Strange, Grant County. My land is underlaid with limestone. It was covered with blue ash and walnut timber; where you find this kind of timber you have good soil. We used barn-yard fertilizer, and we have been trying to improve our crops by rotation, both in quality and quantity. We have a great corn-growing county. In my early days I traded for a tract of land that was so poor that it would hardly sprout peas. I began a systematic system of fertilizing and crop rotation, and in a short time I could raise on that land twenty-five bushels of wheat to the acre. On that farm is where I made my start in the world. In the eastern part of Grant, and the western part of Blackford County, they raise many potatoes on the upland between Hartford City and Marion. We find after raising one good crop, if fertilizers are not used, the succeeding crops become less and less year by year. By going down a little way we find it is all mixed through with gravel. Our

wheat crops were poor on low land, on account of the land not being drained. The wheat would freeze out, but since we have good drainage, crops do not freeze out so badly. Our crop last year was in good shape until the 22d of March. After the freezing weather was over I sowed in clover; portions of the field where not affected, made twenty bushels to the acre. We have got to apply fertilizers to the soil according to the climate and quality of soil.

Mr. Elliott, Posey County. In Posey County we use as a fertilizer, bone dust, and the result is we have big crops of wheat. Our land is building up all the time under a system of fertilizing and crop rotation.

Mr. Harshbarger. I have bought several poor farms. I have sold several of them after bringing them up from ten to twenty-five bushels of wheat to the acre.

Mr. Elliott. In regard to the deterioration of seed, for a number of years we raised Fultz wheat and it was a success, but for two years, the harvest of 1886 and 1887, the crop was said to run out. There is a ridge of land between my farm and the Wabash river which is much higher than next to the river. One piece on that ridge made 36 bushels to the acre, along the location of my land 22 bushels, and lower down 10 bushels. It shows it was not the seed, but there was an atmospheric influence working on that wheat. So we considered then that we were not on the right track to vote the Fultz wheat a failure. The Mediterranean and Velvet Chaff were voted out.

Mr. Strange. Can any one explain the question of seed wheat running out?

Mr. Elliott. Cheat and cockle have run out by the use of the screen in cleaning.

Mr. Higgins, Boone County. In Boone county we have had much swamp land. We have now much of it drained and under cultivation, and this year some immense crops were raised on land in that county that a few years ago was knee deep in water. This question of crop rotation is one of the best to bring up our soil. If you sow clover, let it grow up

and cut it the first year; you don't make much, but if you turn it under your profits will be much greater. The land I cleared 53 years ago is the best I have.

Mr. Hendry. I have been much interested in this discussion. There was a matter introduced by Mr. Jones, that of railroad transportation. The question is whether the Legislature should not step in and keep the price of transportation at such figures that we can live and profit by it.

Prof. Smart. The statement I made is not one that I am responsible for; I took the reports from the United States census; the compilation was made by Prof. Adams, of Cornell University. I was somewhat alarmed at the statement made. If the statement is not correct, it should be known, and proper correction made. I am happy to know that things are better than I thought they were. The statement I made was not that we produce less crops than we used to, but about the natural condition of the soil, as compared with the virgin soil. A fact you have to use fertilizers to keep the soil up, why do you have to keep the soil up if it is kept up without them? I throw this thought out for you to think of.

The Board adjourned until 8:30 A. M.

JANUARY 10, 1889, 8:30 A. M.

The convention met with President Davidson in the chair.

The business of the Delegate Board being completed, on motion of G. W. Rogers, of LaPorte, it adjourned *sine die*.

PROCEEDINGS OF THE OLD BOARD---1888.

JANUARY 10, 1889.

The Board met. The roll call showed a quorum present. A number of bills for advertising, etc., were examined and ordered paid, after which the old Board adjourned *sine die*.

ORGANIZATION OF NEW BOARD—1889.

JANUARY 10, 1889.

The new Board organized by electing Mr. W. B. Seward temporary chairman.

On motion of Mr. Mitchell the Board proceeded to the election of officers for the ensuing year, with the following result:

President—Jasper N. Davidson, Montgomery County.

Vice President—W. A. Banks, Laporte County.

Secretary—Alex. Heron, Marion County.

Treasurer—Sylvester Johnson, Marion County.

General Superintendent—Chas. E. Merrifield, Marion County.

Executive Committee—Messrs. E. H. Peed, W. B. Seward, R. M. Lockhart and Robt. Mitchell.

Treasurer Johnson made a statement detailing the obligations of the Board.

On motion of Mr. Mitchell it was decided to place a short-time loan for \$6,000 to bridge over difficulties until after the meeting of the Legislature.

The time of holding the next fair was fixed for September 23, 1889.

The Executive Committee was instructed to investigate the request of the Citizens' Street Railway Company to allow them to lay a track across the State Fair Grounds, connecting Alabama street with their Central avenue line.

Messrs. Seward, Heron, Johnson and Merrifield were appointed to draft and present a bill for the relief of the State Board to the Legislature.

Board adjourned to February 19, 1889.

INDIANA STATE FAIR.

Premium Awards.

CATTLE.

ROBERT MITCHELL AND J. Q. A. SEIG, Superintendents.

(When no State is mentioned Indiana is understood.)

CLASS I—Shorthorns.

Bull, 3 years and over, Thomas Wilhoit, Middletown	\$25 00
Second, E. S. Frazee, Orange	12 00
Bull, 2 years old and under 3, Thomas Wilhoit, Middletown	20 00
Bull, 1 year old and under 2, Abram Renick & Son, Clintonville, Ky	16 00
Second, J. Baugh & Son, Farmers' Institute	8 00
Bull, under 1 year, Abram Renick & Son, Clintonville, Ky	8 00
Second, Jacob Henn, Redmon, Ill	4 00
Cow, 3 years old and over, Thomas Wilhoit, Middletown	25 00
Second, Jacob Henn, Redmon, Ill	12 00
Cow, 2 years old and under 3, Jacob Henn, Redmon, Ill	20 00
Second, Thomas Wilhoit, Middletown, Ind	10 00
Heifer, 1 year old and under 2, Thomas Wilhoit, Middletown	16 00
Second, J. Baugh & Son, Farmers' Institute	8 00
Heifer, under 1 year, Thomas Wilhoit, Middletown	8 00
Second, Thomas Wilhoit, Middletown	4 00

Committeeman—J. G. Imboden, Decatur, Ill.

CLASS II—Herefords.

Bull, 3 years old and over, Thomas Clark, Beecher, Ill.	\$25 00
Second, Fowler & Van Natta, Fowler.	12 00
Bull, 2 years old and under 3, Adams Earl, Lafayette	20 00
Second, Fowler & Van Natta, Fowler.	10 00
Bull, 1 year old and under 2, Adams Earl, Lafayette	16 00
Second, Fowler & Van Natta, Fowler	8 00
Bull, under 1 year, Adams Earl, Lafayette	8 00
Second, Fowler & Van Natta, Fowler.	4 00
Cow, 3 years old and over, Fowler & Van Natta, Fowler	25 00
Second, G. W. Henry, Ashkum, Ill.	12 00
Cow, 2 years old and under 3, Fowler & Van Natta, Fowler	20 00
Second, G. W. Henry, Ashkum, Ill.	10 00
Heifer, 1 year old and under 2, Adams Earl, Lafayette.	16 00
Second, Fowler & Van Natta, Fowler.	8 00
Heifer, under 1 year, G. W. Henry, Ashkum, Ill	8 00
Second, Adams Earl, Lafayette	4 00

Committeeman—W. H. Leonard.

CLASS III—All Polled Breeds.

Bull, 3 years old and over, Benton Garringer, Washington C. H., Ohio. . .	\$25 00
Second, Brookside Farm Co., Fort Wayne.	12 00
Bull, 2 years old and under 3, Benton Garringer, Washington C. H., Ohio .	20 00
Second, Brookside Farm Co., Fort Wayne	10 00
Bull, 1 year old and under 2, Benton Garringer, Washington C. H., Ohio .	16 00
Second, Brookside Farm Co., Fort Wayne	8 00
Bull, under 1 year, Benton Garringer, Washington C. H., Ohio	8 00
Second, Brookside Farm Co., Fort Wayne.	4 00
Cow, 3 years old and over, Benton Garringer, Washington C. H., Ohio. . .	25 00
Second, Brookside Farm Co., Fort Wayne.	12 00
Cow, 2 years old and under 3, Benton Garringer, Washington C. H., Ohio .	20 00
Second, Brookside Farm Co., Fort Wayne	10 00
Heifer, 1 year old and under 2, Benton Garringer, Washington C. H., Ohio .	16 00
Second, Brookside Farm Co., Fort Wayne.	8 00
Heifer, under 1 year, Benton Garringer, Washington C. H., Ohio	8 00
Second, Brookside Farm Co., Fort Wayne	4 00

Committeeman—R. C. Auld.

CLASS IV—Holstein-Friesians.

Bull, 3 years old and over, S. W. Dungan, Franklin	\$25 00
Second, A. B. Halderman, Elkhart.	12 00
Bull, 2 years old and under 3, G. A. & E. A. Stanton, Greenwood	20 00
Second, A. B. Halderman, Elkhart.	10 00
Bull, 1 year old and under 2, S. W. Dungan, Franklin	16 00
Second, A. B. Halderman, Elkhart.	8 00
Bull, under 1 year, A. B. Halderman, Elkhart	8 00
Second, G. A. & E. A. Stanton, Greenwood	4 00
Cow, 3 years old and over, S. W. Dungan, Franklin	25 00
Second, S. W. Dungan, Franklin	12 00
Cow, 2 years old and under 3, A. B. Halderman, Elkhart	20 00
Second, G. A. & E. A. Stanton, Greenwood	10 00
Heifer, 1 year old and under 2, G. A. & E. A. Stanton, Greenwood	16 00
Second, A. B. Halderman, Elkhart.	8 00
Heifer, under 1 year, S. W. Dungan, Franklin	8 00
Second, G. A. & E. A. Stanton, Greenwood	4 00

Committeeman—L. S. Frederick.

CLASS V—Devons.

Bull, 3 years old and over, D. J. Whitmore, Casstown, Ohio	\$25 00
Second, J. L. Crawford, Oakland City	12 00
Bull, 2 years old and under 3, J. W. Pollock, Cedarville, Ohio	20 00
Bull, 1 year old and under 2, J. W. Pollock, Cedarville, Ohio	16 00
Second, J. W. Pollock, Cedarville, Ohio	8 00
Bull, under 1 year, J. L. Crawford, Oakland City	8 00
Second, D. J. Whitmore, Casstown, Ohio	4 00
Cow, 3 years old and over, D. J. Whitmore, Casstown, Ohio	25 00
Second, J. L. Crawford, Oakland City	12 00
Cow, 2 years old and under 3, D. J. Whitmore, Casstown, Ohio	20 00
Second, D. J. Whitmore, Casstown, Ohio	10 00
Heifer, 1 year old and under 2, D. J. Whitmore, Casstown, Ohio	16 00
Second, J. W. Pollock, Cedarville, Ohio	8 00
Heifer, under 1 year, D. J. Whitmore, Casstown, Ohio	8 00
Second, J. L. Crawford, Oakland City	4 00

Committeeman—L. S. Frederick.

CLASS VI—Jerseys.

Bull, 3 years old and over, H. H. Wheatcraft, Southport	\$25 00
Second, Cochran & Son, Spiceland	12 00
Bull, 2 years old and under 3, Cochran & Son, Spiceland	20 00
Second, Peter Raab, Indianapolis	10 00
Bull, 1 year old and under 2, H. H. Wheatcraft, Southport	16 00
Second, Cochran & Son, Spiceland	8 00
Bull, under 1 year, Peter Raab, Indianapolis	8 00
Second, H. H. Wheatcraft, Southport.	4 00
Cow, 3 years old and over, Cochran & Son, Spiceland	25 00
Second, H. H. Wheatcraft, Southport	12 00
Cow, 2 years old and under 3, H. H. Wheatcraft, Southport	20 00
Second, Cochran & Son, Spiceland	10 00
Heifer, 1 year old and under 2, H. H. Wheatcraft, Southport.	16 00
Second, Cochran & Son, Spiceland	8 00
Heifer, under 1 year, Cochran & Son, Spiceland	8 00
Second, H. H. Wheatcraft, Southport	4 00

Committeeman—Dr. D. W. Voyles.

CLASS VII—Sweepstakes—Beef Breeds of Cattle.

Bull, any age, Adams Earl, Lafayette	\$30 00
Cow or heifer, any age, Thomas Wilhoit, Middletown	25 00
Bull and 5 of his get (one must be a calf), Benton Garringer, Washington, C. H., Ohio	25 00

Sweepstakes—Milk Breeds.

Bull, any age, H. H. Wheatcraft, Southport	\$30 00
Cow or heifer, any age, Cochran & Son, Spiceland	25 00
Bull and 5 of his get (one must be a calf), H. H. Wheatcraft, Southport . .	25 00

Herd of Beef Breeds of Cattle.

Herd of 5 head, consisting of 1 bull 2 years old and over; 1 cow, 3 years old and over; 1 heifer, 2 years old and under 3; 1 heifer, 1 year and under 2; 1 heifer calf, under 1 year; Thomas Wilhoit, Mid- dletown	150 00
Second, Benton Garringer, Washington, C. H., Ohio.	75 00
Young herd of cattle, to consist of 1 bull and 4 heifers, all under 2 years of age, J. Baugh & Son, Farmers' Institute	50 00
Second, Adam Earl, Lafayette.	25 00
Three fat steers, M. Cutsinger, Edinburg	50 00

CLASS VIII—Herds of Dairy Breeds of Cattle.

Herd consisting of 1 bull, 2 years old or over; 1 cow, 3 years old or over; 1 heifer, 2 years old and under 3; 1 heifer, 1 year old and under 2; heifer calf under 1 year old; H. H. Wheatcraft, Southport. . .	150 00
Second, G. A. and E. A. Stanton, Greenwood	75 00
Young herd of cattle, to consist of 1 bull and 4 heifers, all under 2 years of age. G. A. and E. A. Stanton, Greenwood	50 00
Second, J. W. Pollock, Cedarville, Ohio	25 00

Committeeman—Dr. D. W. Voyles.

HORSES.

V. K. OFFICER—Superintendent.

CLASS IX—Draft Horses.

FRENCH DRAFT.

Stallion 4 years old and over, Bridgeland and Berry, Indianapolis.	\$35 00
Second, John A. Dulin, Gadsden.	18 00
Stallion 3 years old and under 4, Bridgeland and Berry Indianapolis	25 00
Second, J. W. McNamee, Sugar Creek	13 00
Stallion 2 years old and under 3, Bridgeland and Berry, Indianapolis	16 00
Second, Bridgeland and Berry, Indianapolis	8 00
Stallion 1 year old and under 2, Bridgeland and Berry, Indianapolis	8 00
Stallion colt under 1 year, Bridgeland and Berry, Indianapolis	6 00
Mare 4 years old and over, Bridgeland and Berry, Indianapolis.	20 00
Second, Bridgeland and Berry, Indianapolis.	10 00
Mare 3 years old and under 4, Bridgeland and Berry, Indianapolis	16 00
Mare 2 years old and under 3, Bridgeland and Berry, Indianapolis	12 00
Second, Bridgeland and Berry, Indianapolis	6 00
Mare 1 year old and under 2, Bridgeland and Berry, Indianapolis	8 00
Second, J. W. McNamee, Sugar Creek	4 00

Committeeman—W. W. Danford, Eaton, Ohio.

CLASS X—Clydesdale and English Shire.

Stallion 4 years old and over, Banks and Hilt, Laporte	\$35 00
Second, John G. Huston, Blandonsville, Ill	18 00
Stallion 3 years old and under 4, John G. Huston, Blandonsville, Ill	25 00
Second, Banks and Hilt, Laporte	13 00
Stallion 2 years old and under 3, John G. Huston, Blandonsville, Ill	16 00
Second, Door Prairie Live Stock Ass'n., Door Village	16 00
Stallion 1 year old and under 2, John G. Huston, Blandonsville, Ill	8 00
Second, Banks and Hilt, Laporte	4 00
Mare 4 years old and over, John G. Huston, Blandonsville, Ill	20 00
Second, W. L. Risk, Greensboro	10 00
Mare 3 years old and under 4, Brookside Farm Co., Fort Wayne	16 00
Second, W. L. Risk, Greensboro	8 00
Mare 2 years old and under 3, Door Prairie Live Stock Association, Door Village	12 00
Second, S. J. Fletcher, Indianapolis	6 00
Mare 1 year old and under 2, John Leonard, New Lisbon	8 00
Mare colt under 1 year, Brookside Farm Co., Fort Wayne	6 00
Second, S. J. Fletcher, Indianapolis	3 00

SILVER MEDAL PRESENTED BY AMERICAN CLYDESDALE ASSOCIATION.

Stallion 4 years old and over, Brookside Farm Co., Ft. Wayne.
 Stallion 3 years old and under 4, Banks and Hilt, Laporte.
 Stallion 2 years old and under 3, Banks and Hilt, Laporte.
 Stallion 1 year old and under 2, Banks and Hilt, Laporte.
 Mare 1 year old and under 2, John Leonard, New Lisbon.
 Mare sucking colt, Brookside Farm Co., Ft. Wayne.

Committeeman—Robert Holloway.

CLASS XI—Belgian Horses.

Stallion 4 years old and over, Wabash Importing Company, Wabash	\$35 00
Second, Wabash Importing Co., Wabash	18 00
Stallion 3 years old and under 4, Wabash Importing Co., Wabash	25 00
Second, Wabash Importing Co., Wabash	13 00
Stallion 2 years old and under 3, Wabash Importing Co., Wabash.	16 00
Stallion 1 year old and under 2, Wabash Importing Co., Wabash	8 00
Second, Wabash Importing Co., Wabash	4 00
Mare 4 years old and over, Wabash Importing Co., Wabash	20 00
Second, Wabash Importing Co., Wabash	10 00
Mare 3 years old and under 4, Wabash Importing Co., Wabash	16 00
Mare 2 years old and under 3, Wabash Importing Co., Wabash	12 00
Mare 1 year old and under 2, Wabash Importing Co., Wabash	8 00
Mare colt under 1 year, Wabash Importing Co., Wabash	6 00

Draft Herd—All Classes.

Herd of 6, consisting of one stallion, one mare 4 years old and over, one 3 years and under 4, one 2 years and under 3, one 1 year old and under 2, and one sucking filly, Bridgeland & Berry, Indianapolis . \$70 00
Second, Wabash Importing Co., Wabash 35 00

Committeeman—W. W. Danford, Eaton, Ohio.

CLASS XII—Cleveland Bays and French Coach.

Stallion 4 years old and over, Mt. Jackson Importing Co., Mt. Jackson . . \$35 00
Second Mt. Jackson Importing Co., Mt. Jackson 18 00
Stallion 3 years old and under 4, Door Prairie Live Stock Association,
Door Village 25 00
Second, Frank A. Price, Kokomo 13 00
Stallion 2 years old and under 3, Banks & Hilt, Laporte 16 00
Second, Banks & Hilt, Laporte 8 00
Stallion, 1 year old and under 2, Door Prairie Live Stock Association, Door
Village 8 00
Mare, 3 years old and under 4, Door Prairie Live Stock Association, Door
Village 16 00
For the best native bred Cleveland bay horse colt, any age, to be bred by the
exhibitor, and foaled in Indiana, sire and dam both to be recorded
in the 1st vol. of the A. C. B. record, Door Prairie Live Stock Asso-
ciation, Door Village Silver Medal
Best mare, conditions as above, Door Prairie Live Stock Association, Door
Village Silver Medal

Committeeman—W. W. Danford, Eaton, Ohio.

CLASS XIII—Horses for General Purposes.

Stallion, 4 years old and over, Baum, Grove & Lorind, Frankfort \$35 00
Second, Fort Bros., Indianapolis 18 00
Stallion, 3 years old and under 4, Hamrick & Jackson, Plainfield 25 00
Second, Frank A. Price, Kokomo 13 00
Stallion, 2 years old and under 3, Allen Jackson & Son, Plainfield 16 00
Second, John H. Carter, Clermont 8 00
Stallion, 1 year old and under 2, W. L. Risk, Greensboro 8 00
Stallion, colt under 1 year, J. W. Sutton, Judson 6 00
Mare, 4 years old and over, Tanglewood Stock Farm, Indianapolis 20 00
Second, C. L. Clancy, Edinburg 10 00
Mare, 3 years old and under 4, C. L. Clancy, Edinburg 16 00
Mare, 2 years old and under 3, Tanglewood Stock Farm, Indianapolis . . . 12 00
Second, C. L. Clancy, Edinburg 6 00

Mare, 1 year old and under 2, C. L. Clancy, Edinburg	\$8 00
Second, Lewis H. M. Brown, Brightwood	4 00
Gelding, 3 years old and over, L. S. Ayres, Indianapolis	25 00
Second, C. L. Clancy, Edinburg	12 00
Pair of geldings or mares, L. S. Ayres, Indianapolis	20 00
Second, A. C. Remy, Indianapolis	10 00

Committeeman—W. W. Danford, Eaton, Ohio.

CLASS XIV—Light Harness Horses.

W. A. BANKS, Superintendent.

Stallion, 4 years old and over, Joseph Ray, jr., Addison	\$35 00
Second, B. T. Buford, Danville	18 00
Stallion, 3 years old and under 4, M. L. Hare, Fisher's Switch	25 00
Second, B. T. Buford, Danville	13 00
Stallion, 2 years old and under 3, Berry Randall, Indianapolis	16 00
Second, Tanglewood Stock Farm, Indianapolis	8 00
Stallion, 1 year old and under 2, W. L. Risk, Greensboro	8 00
Second, M. L. Hare, Fisher's Switch	4 00
Gelding, 3 years old and over, J. S. Bradley, Indianapolis	25 00
Second, B. G. Fairley, Rushville	12 00
Mare, 4 years old and over, Milton Daily, Indianapolis	20 00
Second, Buck Dickerson, Greensburg	10 00
Mare, 3 years old and under 4, B. T. Buford, Danville	16 00
Second, M. L. Hare, Fisher's Switch	8 00
Mare, 2 years old and under 3, M. L. Hare, Fisher's Switch	12 00
Second, B. T. Buford, Danville	6 00
Mare, 1 year old and under 2, M. L. Hare, Fisher's Switch	8 00
Second, B. T. Buford, Danville	4 00
Mare colt, under 1 year, M. L. Hare, Fisher's Switch	6 00
Second, G. A. Harding, Paris, Ill	3 00
Light harness team, J. S. Bradley, Indianapolis	16 00
Second, B. T. Buford, Danville	8 00
Herd of six, one stallion, one mare 4 years old and over, one mare 3 and under 4, one 2 years and under 3, one 1 and under 2, and one sucking filly, M. L. Hare, Fisher's Switch	70 00
Second, John Morgan, Plainfield	35 00
Stallion and five of his get, one of which shall be a suckling, M. L. Hare, Fisher's Switch	25 00
Stallion, gelding or mare, any age, saddle, L. S. Ayres, Indianapolis	15 00
Second, Allen Jackson & Son, Plainfield	7 00

Committee—T. C. Bungers, Columbus; H. B. Howland, Lee Fort.

CLASS XV—Sweepstakes on Horses.

Stallion of any age, draft, Banks & Hilt, Laporte	\$25 00
Stallion, any age, general purpose, Baum, Grove & Lorind, Frankfort . . .	25 00
Stallion, any age, light harness, Tanglewood Stock Farm, Indianapolis . .	25 00
Mare, any age, draft, John G. Huston, Blandonsville, Ill.	20 00
Mare, any age, general purpose, Tanglewood Stock Farm, Indianapolis . .	20 00
Mare, any age, light harness, M. L. Hare, Fisher's Switch	20 00
Brood mare with sucking colt, draft, Bridgeland & Berry, Indianapolis . .	10 00
Brood mare with sucking colt, general purpose, J. W. Sutton, Judson . . .	10 00
Brood mare with sucking colt, light harness, M. L. Hare, Fisher's Switch. .	10 00

Committees—M. W. Hillis, Greensburg, Ind.; J. C. Robinson, Kingston, Ind.; Lee Fort, John W. Schoonover. Light Harness Committee: Lewis S. Frederick, Shelbyville, Ky.; John E. Worker, Dora, Ind.

CLASS XVI—Jacks, Jennets and Mules.

Mule, four years old and over, K. Munter, Indianapolis	\$10 00
Second, K. Munter, Indianapolis	5 00
Mule, 3 years old and under 4, T. J. Smith, Shelbyville	8 00
Second, T. J. Smith, Shelbyville	4 00
Pair of mules 3 years old and over, K. Munter, Indianapolis	20 00
Second, T. J. Smith, Shelbyville	10 00

CLASS XVII—Speed List.

DICK JONES, Superintendent.

Three-year-old Trot—Special Purse, \$100:

John Dickerson, Greensburg	\$50 00
Wm. M. Cook, Glenwood	30 00
Matt Cooper, Boswell	20 00
Time—2:38½, 2:42, 2:33.	

2:37 Pace—Purse, \$200:

Ira Cadwallader, West Lebanon	100 00
Thomas Levi, Noblesville	65 00
Schicketanz & Thorp, Plainfield	35 00
Time—2:32½, 2:35, 2:37, 2:36.	

2:37 Trot—Purse, \$200:

Gus Glidden, Raleigh	100 00
Buck Dickerson, Greensburg	65 00
S. J. Peabody, Columbia City	35 00
Time—2:36½, 2:35, 2:35, 2:33½.	

3-minute Trot—Purse, \$200 :

Forest Rich Stock Farm, Edinburg	\$100 00
Thomas Levi, Noblesville	65 00
E. V. Mitchell, Martinsville	35 00
Time—2:35, 2:36, 2:36½.	

Runners—Half mile best 2 in 3—Purse, \$100.

M. Stark, Paris, Ill.	50 00
James Malay, Rensselaer	35 00
J. H. Parkhurst, Franklin	15 00
Time—0:53, 0:54½.	

Free-for-All Pace—Purse, \$200.

Buck Dickerson, Greensburg	100 00
Geo. Cutsinger, Edinburg	65 00
Time—2:21½, 2:21, 2:23½.	

2:30 Trot—Purse, \$200.

L. W. Cobb, Aurora	100 00
John Davis, Columbus	65 00
M. J. Ridgeway, Laporte	35 00
Time—2:33, 2:31½, 2:32, 2:34½, 2:33½.	

Running Race—1 Mile and Repeat—Purse, \$130.

James Malay, Rensselaer	70 00
G. W. Blackburn, Madison	45 00
M. Stark, Paris, Ill.	15 00
Time—1:52½, 1:55½.	

Stallion Trot—All Ages—Purse, \$200.

C. N. Dickerson, North Vernon	100 00
James Hazelton, Indianapolis	65 00
J. P. Fairley, Rushville	35 00
Time—2:32½, 2:33½, 2:32½.	

Free-for-All Trot—Consolation purse, \$100.

John Dickerson, Greensburg	33 33
Buck Dickerson, Greensburg	33 33
J. P. Fairley, Rushville.	33 33
Time—2:33, 2:24½.	

2:50 Pace—Purse, \$200.

C. N. Dickerson, North Vernon	100 00
John Morgan	65 00
Time—2:38, 2:36½, 2:36½.	

SHEEP.

S. W. DUNGAN—Superintendent.

CLASS XVIII—*Fine Wool, to Include American, French and Spanish Merinos.*

Buck 2 years old and over, Uriah Privett & Bro., Greensburg.	\$12 00
Second, Uriah Privett & Bro., Greensburg	6 00
Buck 1 year old and under 2, Cook & Morse, West Mansfield, Ohio	8 00
Second, Uriah Privett & Bro., Greensburg	4 00
Buck under 1 year, Cook & Morse, West Mansfield, Ohio.	6 00
Second, J. W. Pollock, Cedarville, Ohio	3 00
Ewe 2 years old and over, Uriah Privett & Bro., Greensburg	10 00
Second, Cook & Morse, West Mansfield, Ohio	5 00
Ewe 1 year old and under 2, Uriah Privett & Bro., Greensburg	6 00
Second, J. W. Pollock, Cedarville, Ohio	3 00
Ewe under 1 year, J. W. Pollock, Cedarville, Ohio.	5 00
Second, Cook & Morse, West Mansfield, Ohio	3 00
Five lambs, Cook & Morse, West Mansfield, Ohio	8 00
Second, J. W. Pollock, Cedarville, Ohio	3 00

Committeeman—E. H. Crow.

CLASS XIX—*Long-Wool Sheep—Cotswold, Leicester or Lincolns.*

Buck 2 years old and over, Uriah Privett, Greensburg	\$12 00
Second, Uriah Privett, Greensburg.	6 00
Buck 1 year old and under 2, Thompson & Williams, Arcana.	8 00
Second, J. B. Harkless & Son, Knightstown	4 00
Buck under 1 year, J. B. Harkless & Son, Knightstown	6 00
Second, J. B. Harkless & Son, Knightstown	3 00
Ewe, 2 years old and over, Thompson & Williams, Arcana	10 00
Second, J. B. Harkless & Son, Knightstown	5 00
Ewe, 1 year old and under 2, Uriah Privett & Bro., Greensburg	6 00
Second, Thompson & Williams, Arcana	3 00
Ewe, under 1 year, J. B. Harkless & Son, Knightstown	5 00
Second, J. B. Harkless & Son, Knightstown	3 00
Five lambs, J. B. Harkless & Son, Knightstown	8 00
Second, W. T. Woodford & Son, Paris, Ky	4 00

Committeeman—W. I. Samuels, Bardstown, Ky.

CLASS XX—Southdowns.

Buck, 2 years old and over, Uriah Privett & Bro., Greensburg	\$12 00
Second, Uriah Privett & Bro., Greensburg	6 00
Buck, 1 year old and under 2, Uriah Privett & Bro., Greensburg	8 00
Second, Uriah Privett & Bro., Greensburg	4 00
Buck, under 1 year, Uriah Privett & Bro., Greensburg	6 00
Second, Uriah Privett & Bro., Greensburg	3 00
Ewe, 2 years old and over, Uriah Privett & Bro., Greensburg	10 00
Second, Uriah Privett & Bro., Greensburg	5 00
Ewe, 1 year old and under 2, Uriah Privett & Bro., Greensburg	6 00
Second, Uriah Privett & Bro., Greensburg	3 00
Ewe, under 1 year, Uriah Privett & Bro., Greensburg	5 00
Second, Uriah Privett & Bro., Greensburg	3 00
Five lambs, Uriah Privett & Bro., Greensburg	8 00

Committeeman—Mortimer Levering, Lafayette.

CLASS XXI—Oxfordshires, Shropshires and Hampshires.

Buck, 2 years old and over, Thompson & Williams, Arcana	\$12 00
Second, J. R. and W. A. Shafer, Middletown, Ohio	6 00
Buck, 1 year old and under 2, Thompson & Williams, Arcana	8 00
Second, J. R. and W. A. Shafer, Middletown, Ohio	4 00
Buck, under 1 year, Thompson & Williams, Arcana	6 00
Second, Geo. Allen & Son, Allerton, Ill	3 00
Ewe, 2 years old and over, Geo. Allen & Son, Allerton, Ill	10 00
Second, Thompson & Williams, Arcana	5 00
Ewe, 1 year old and under 2, J. R. and W. A. Shafer, Middletown, Ohio	6 00
Second, Thompson & Williams, Arcana	3 00
Ewe, under 1 year, Thompson & Williams, Arcana	5 00
Second, J. R. and W. A. Shafer, Middletown, Ohio	3 00
Five Lambs, J. R. and W. A. Shafer, Middletown, Ohio	8 00
Second, Thompson & Williams, Arcana	4 00

Committeeman—Mortimer Levering, Lafayette.

CLASS XXII—Sweepstakes on Sheep—Fine Wool.

Buck, any age, Uriah Privett & Bro., Greensburg	\$20 00
Ewe, any age, Cook & Morse, West Mansfield, Ohio	20 00
Flock, consisting of 1 buck, any age; 2 ewes, 2 years old and over; 2 ewes, 1 year old and under 2; and 2 ewes, under 1 year old, Uriah Pri- vett & Bro., Greensburg	30 00
Second, Cook & Moore, West Mansfield, Ohio	15 00

CLASS XXIII—Sweepstakes on Sheep—Long Wool.

Buck, any age, J. B. Harkless & Sons, Knightstown	\$20 00
Ewe, any age, Uriah Privett & Bro., Greensburg	20 00
Flock, consisting of 1 buck, any age; 2 ewes, 2 years old and over; 2 ewes, 1 year old and under 2; and 2 ewes, under 1 year old, J. B. Hark- less & Son, Knightstown	30 00
Second, W. T. Woodford & Son, Paris, Ky	15 00
<i>Committeeman—C. F. Darnell, Indianapolis.</i>	

CLASS XXIV—Sweepstakes—Middle Wool.

Bucks, any age, Thompson & Williams, Arcana	\$20 00
Ewe, any age, Thomas & Williams, Arcana	20 00
Flock, consisting of one buck any age, two ewes 2 years old and over, two ewes 1 year old and under 2, two ewes under 1 year old, Thompson & Williams, Arcana	30 00
Second, Geo. Allen & Son, Allerton, Ill.	15 00
<i>Committee—W. I. Samuels, Bardstown, Ky.; Mortimer Lev- ering, Lafayette; C. F. Darnell, Indianapolis.</i>	

HOGS.

E. H. PEED, Superintendent.

CLASS XXV—Berkshires.

Boar, 2 years old and over, A. S. Gilman & Co., Greensburg	\$15 00
Second, S. C. Rausch, Warren	10 00
Boar, 1 year old and under 2, A. S. Gilmore & Co., Greensburg	12 00
Second, Maze & Kirtley, Sharpsville	6 00
Boar, under 12 and over 6 months, Maze & Kirtley, Sharpsville.	10 00
Second, I. N. Barker, Thorntown.	5 00
Boar, under 6 months, A. S. Gilmore & Co., Greensburg	5 00
Second, Driver & Guinn, Arcadia	3 00
Five shoats, under 6 months, A. S. Gilmore & Co., Greensburg	10 00
Second, I. N. Barker, Thorntown	5 00
Sow, 2 years old and over, S. C. Rausch, Warren	15 00
Second, James Riley, Thorntown.	10 00
Sow, 1 year old and under 2, Driver & Guinn, Arcadia.	12 00
Second, Driver & Guinn, Arcadia	6 00
Sow, under 12 and over 6 months, Driver & Guinn, Arcadia	10 00
Second, Heck & Baker, Waldron	5 00
Sow, under 6 months, Driver & Guinn, Arcadia	5 00
Second, Cass & Burns, Buffalo Hart, Ill.	3 00
<i>Committeeman—R. A. Thompson.</i>	

CLASS XXVI—Poland China.

Boar, 2 years old and over, J. W. Williams & Co., Briant	\$15 00
Second, Lloyd Mugg & Co., Center	10 00
Boar, 1 year old and under 2, J. W. Williams & Co., Briant	12 00
Second, E. E. Elliott, Knightstown.	6 00
Boar, under 12 and over 6 months, D. P. Shawhan, Rushville	10 00
Second, H. A. Johnson & Co., Indianapolis.	5 00
Boar, under 6 months, Brown & Hinshaw, Rural	5 00
Second, A. J. Alexander, Burnie.	3 00
Five shoats, under 6 months, Correll & Offman, Mechanicsburg, Ill	10 00
Second, D. P. Shawhan, Rushville	5 00
Sow, 2 years old and over, Lloyd Mugg & Co., Center	15 00
Second, H. A. Johnson & Co., Indianapolis	10 00
Sow, 1 year old and under 2, Brown & Hinshaw, Rural	12 00
Second, Wilson & Barker, Poplar Grove	6 00
Sow, under 12 and over 6 months, Oiler & Wilkins, Russiaville	10 00
Second, Wilson & Barker, Poplar Grove	5 00
Sow, under 6 months, D. P. Shawhan, Rushville	5 00
Second, Martin Fentriss, Kennard	3 00
Sow and not less than five sucking pigs, Wilson & Barker, Poplar Grove . .	15 00
Second, J. A. Heavenridge, Liberty	10 00

Committeeman—R. A. Thompson.

CLASS XXVII—Chester Whites.

Boar 2 years old and over, W. W. Snider, Shelbyville	\$12 00
Second, J. H. Eaton, Bucyrus, Ohio	6 00
Boar 1 year old and under 2, J. H. Eaton, Bucyrus, Ohio	10 00
Second, Ellis House, Bicknell	5 00
Boar under 12 and over 6 months, J. H. Eaton, Bucyrus, Ohio	8 00
Second, William Pace, Bicknell	4 00
Boar under 6 months, R. S. Russell, Zionsville	5 00
Second, William Pace, Bicknell	3 00
Five shoats under 6 months, R. S. Russell, Zionsville	10 00
Second, Ellis House, Bicknell	5 00
Sow 2 years old and over, W. W. Snyder, Shelbyville	12 00
Second, J. H. Eaton, Bucyrus, Ohio	6 00
Sow 1 year old and under 2, J. H. Eaton, Bucyrus, Ohio	10 00
Second, J. H. Eaton, Bucyrus, Ohio	5 00
Sow under 12 and over 6 months, J. H. Eaton, Bucyrus, Ohio.	8 00
Second, J. A. Heavenridge, Liberty	4 00
Sow under 6 months, W. W. Snider, Shelbyville.	5 00
Second, J. H. Eaton, Bucyrus, Ohio	3 00
Sow and not less than 5 sucking pigs, J. H. Eaton, Bucyrus, Ohio	10 00
Second, R. S. Russell, Zionsville.	5 00

Committeeman—R. A. Thompson.

CLASS XXVIII—Suffolk, Essex, and other small breeds, regardless of color.

Boar 2 years old and over, Allen C. Green, Winchester	\$12 00
Second, A. W. Martin, Muncie.	6 00
Boar 1 year old and under 2, A. S. Gilmore & Co., Greensburg	10 00
Second, A. W. Martin, Muncie.	5 00
Boar under 12 and over 6 months, A. W. Martin, Muncie.	8 00
Second, A. C. Green, Winchester.	4 00
Boar under 6 months, A. C. Green, Winchester	5 00
Second, A. C. Green, Winchester.	3 00
Five shoats under 6 months old, A. C. Green, Winchester.	10 00
Second, A. C. Green, Winchester.	5 00
Sow 2 years old and over, A. C. Green, Winchester.	12 00
Second, A. W. Martin, Muncie	6 00
Sow 1 year old and under 2, A. W. Martin, Muncie	10 00
Second, A. W. Martin, Muncie.	5 00
Sow under 12 and over 6 months, A. W. Martin, Muncie.	8 00
Second, A. C. Green, Winchester.	4 00
Sow under 6 months, A. C. Green, Winchester.	5 00
Second, A. C. Green, Winchester.	3 00
Sow and not less than 5 sucking pigs, A. C. Green, Winchester	10 00
Second, A. C. Green, Winchester.	5 00

Committeeman—T. W. Tuttle.

CLASS XXIX—Sweepstakes on Hogs.—Poland Chinas, Chester Whites and Other Large Breeds.

Boar, any age, Brown & Hinshaw, Rural	\$20 00
Sow, any age, E. E. Elliott, Knightstown	20 00
Herd, all owned by one exhibitor or firm, J. W. Williams & Co., Briant	40 00
Second, Oilar & Wilkins, Russiaville.	20 00
Boar and five of his get, under 12 months, J. Cunningham & Co., Bunker Hill.	20 00
Second, Lloyd Mugg & Co., Center	10 00

Committee—W. A. Maze, R. A. Thompson.

CLASS XXX—Berkshires, Essex, Suffolks, and Other Small Breeds.

Boar, any age, A. S. Gilmore & Co., Greensburg	\$20 00
Sow, any age, S. C. Rausch, Warren	20 00
Herd, all owned by one exhibitor or firm, Maze & Kirtley, Sharpsville.	40 00
Second, James Riley, Thorntown	20 00

Committeeman—T. M. Reveal.

POULTRY.

J. A. McCLUNG, Superintendent.

CLASS XXXI.

Pair Light Brahma fowls, Colsher & Wright, Noblesville	\$4 00
Second, Allen Bros., Bloomington	2 00
Pair Light Brahma chicks, I. N. Barker, Thorntown	4 00
Second, I. N. Barker, Thorntown	2 00
Pair Dark Brahma fowls, Moorehouse & Myers, Crawfordsville	4 00
Second, C. B. Cage, Shelbyville	2 00
Pair Dark Brahma chicks, T. H. Buck, Morristown	4 00
Second, Colsher & Wright, Noblesville	2 00
Pair Buff Cochin fowls, C. H. Johnson, Rushville	4 00
Second, C. H. Johnson, Rushville	2 00
Pair Buff Cochin chicks, C. H. Johnson, Rushville	4 00
Second, Moorehouse & Myers, Crawfordsville	2 00
Pair Partridge Cochin fowls, I. N. Barker, Thorntown	4 00
Second, G. J. Bergener, Indianapolis	2 00
Pair Partridge Cochin chicks, I. N. Barker, Thorntown	4 00
Second, I. N. Barker, Thorntown	2 00
Pair White Cochin fowls, C. B. Cage, Shelbyville	4 00
Second, C. B. Cage, Shelbyville	2 00
Pair White Cochin chicks, C. B. Cage, Shelbyville	4 00
Second, Moorehouse & Myers, Crawfordsville	2 00
Pair Black Cochin chicks, B. F. Hill, Indianapolis	4 00
Second, Allen Bros., Bloomington	2 00
Pair Plymouth Rock fowls, C. B. Cage, Shelbyville	4 00
Second, A. W. Newlin, Bloomington	2 00
Pair Plymouth Rock chicks, I. N. Barker, Thorntown	4 00
Second, A. W. Newlin, Bloomington	2 00
Pair White Plymouth Rock fowls, T. H. Buck, Morristown	4 00
Second, T. H. Buck, Morristown	2 00
Pair Silver Wyandotte fowls, C. B. Cage, Shelbyville	4 00
Second, Moorehouse & Myers, Crawfordsville	2 00
Pair Silver Wyandotte chicks, C. B. Cage, Shelbyville	4 00
Second, Moorehouse & Myers, Crawfordsville	2 00
Pair Golden Wyandotte fowls, D. H. Jenkins, Indianapolis	4 00
Second, D. H. Jenkins, Indianapolis	2 00
Pair Golden Wyandotte chicks, D. H. Jenkins, Indianapolis	4 00
Second, D. H. Jenkins, Indianapolis	2 00

Pair White Wyandotte fowls or chicks, C. B. Cage, Shelbyville	\$4 00
Second, Jerry Carter, White Lick	2 00
Pair B. B. Red Game fowls, M. H. Anderson, Rockville	3 00
Pair B. B. Red Game chicks, M. H. Anderson, Rockville	3 00
Second, M. H. Anderson, Rockville	2 00
Pair Lanshan fowls, J. W. Taylor, Ganetsville	3 00
Second, T. H. Buck, Morristown	2 00
Pair Lanshan chicks, C. B. Cage, Shelbyville	3 00
Second, Moorehouse & Myers, Crawfordsville	2 00
Pair Black Java fowls, or chicks, T. H. Buck, Morristown	3 00
Second, T. H. Buck, Morristown	1 00
Pair White Leghorn fowls, Wm. Tobin, Indianapolis	3 00
Second, Wm. Tobin, Indianapolis	1 00
Pair White Leghorn chicks, Wm. Tobin, Indianapolis	3 00
Second, T. H. Buck, Morristown	1 00
Pair Brown Leghorn fowls, Emrick & Dreschel, Indianapolis	3 00
Second, T. H. Buck, Morristown	1 00
Pair Brown Leghorn chicks, Emrick & Dreschel, Indianapolis	3 00
Second, Allen Bros., Bloomington	1 00
Pair W. F. Black Spanish chicks, C. B. Cage, Shelbyville	3 00
Pair W. C. Black Polish fowls, or chicks, T. H. Buck, Morristown	3 00
Second, A. W. Newlin, Bloomington	1 00
Pair Houdan fowls, Jerry Carter, White Lick	3 00
Pair Houdan chicks, A. W. Newlin, Bloomington	3 00
Second, A. W. Newlin, Bloomington	1 00
Pair Golden Hamburg fowls, Colsher & Wright, Noblesville	3 00
Pair Silver Hamburg fowls, C. B. Cage, Shelbyville	3 00
Second, T. H. Buck, Morristown	1 00
Pair Silver Hamburg chicks, T. H. Buck, Morristown	3 00
Second, Frank Aldag, Indianapolis	1 00
Pair Red Cap fowls, or chicks, T. H. Buck, Morristown	3 00
Pair B. B. Red Game Bantam fowls, W. H. Frey, Indianapolis	3 00
Second, F. R. Shepherd & Co., Indianapolis	1 00
Pair B. B. Red Game Bantam chicks, W. H. Frey, Indianapolis	3 00
Second, W. H. Seaton, Indianapolis	1 00
Pair Golden Seabright Bantam fowls, F. F. McDonough	2 00
Second, I. N. Barker, Thorntown	1 00
Pair Golden Seabright Bantam chicks, I. N. Barker, Thorntown	2 00
Second, I. N. Barker, Thorntown	1 00
Pair Silver Seabright Bantam fowls, or chicks, Jerry Carter, White Lick	2 00
Pair Bronze Turkeys, old birds, Mintz Bros., Mohawk	4 00
Second, Mintz Bros., Mohawk	2 00
Pair Bronze Turkeys, hatch of 1888, Moorehouse & Myers, Crawfordsville	4 00
Second, Mintz Bros., Mohawk	2 00

Pair White Holland Turkeys, old birds, T. H. Buck, Morristown	\$4 00
Second, Allen Bros., Bloomington	2 00
Pair Embden Geese, A. W. Newlin, Bloomington	4 00
Second, Moorehouse & Myers, Crawfordsville	2 00
Pair Toulouse Geese, A. S. Gilmore & Co., Greensburg	4 00
Second, Allen Bros., Bloomington	2 00
Pair Chinese Geese, H. C. Green, Indianapolis	3 00
Second, T. H. Buck, Indianapolis	1 00
Pair Pekin ducks, H. C. Green, Indianapolis	3 00
Second, C. B. Cage, Shelbyville	1 00
Pair Rouen ducks, A. W. Newlin, Bloomington	3 00
Second, T. H. Buck, Morristown	1 00
Pair Aylesbury ducks, W. A. Shafer, Middletown, Ohio	3 00
Second, T. H. Buck, Morristown	1 00
Heaviest cock or cockerel, Allen Bros., Bloomington	3 00
Heaviest hen or pullet, Moorehouse & Myers, Crawfordsville	2 00
Light Brahma breeding pen, Colsher & Wright, Noblesville	4 00
Dark Brahma breeding pen, Moorehouse & Myers, Crawfordsville	4 00
Second, C. B. Cage, Shelbyville	2 00
Buff Cochin breeding pen, C. H. Johnson, Rushville.	4 00
Second, C. H. Johnson, Rushville	2 00
Black Cochin breeding pen, B. F. Hill, Indianapolis.	4 00
Second, Allen Bros., Bloomington.	2 00
White Cochin breeding pen, C. B. Cage, Shelbyville	4 00
Second, A. W. Newlin, Bloomington	2 00
Plymouth Rock (Barred) breeding pen, A. W. Newlin, Bloomington	4 00
Second, J. A. Heavenridge, Liberty	2 00
Wyandotte (Laced) breeding pen, Moorehouse & Myers, Crawfordsville	4 00
Second, T. H. Buck, Morristown.	2 00
Lanshan breeding pen, Mrs. W. H. Whitney, Indianapolis	4 00
Black-Breasted Red Game breeding pen, W. H. Anderson, Rockville	4 00
Second, Allen Bros., Bloomington	2 00
White Leghorn breeding pen, Wm. Tobin, Indianapolis	4 00
Second, J. A. Heavenridge, Liberty	2 00
Not less than 10 varieties pigeons, Richard C. Castenholtz, Indianapolis	5 00
Best collection Pit Game pigeons, F. R. Shepherd & Bro., Indianapolis	5 00

DOGS.

 GEO. JACKSON—Superintendent.

CLASS XXXII.

English Setter (champion class), dog or bitch, P. T. Madison, Indianapolis .	\$5 00
English Setter (open class) dog, J. M. Freeman, Bicknell	5 00
Second, R. Robinson, Indianapolis	2 50
English Setter (open class) bitch, John A. Hunter, Sanborn	5 00
Second, J. M. Freeman, Bicknell.	2 50
English Setter puppy under 12 months, J. M. Freeman, Bicknell	2 50
Second, R. Robinson, Indianapolis	1 50
Irish Setter (open class) dog, J. E. Bradshaw, Indianapolis.	5 00
Second, J. E. Bradshaw, Indianapolis	2 50
Irish Setter (open class) bitch, E. P. Roll, Indianapolis	5 00
Gordon Setter (open class) bitch, C. R. Wiles, Indianapolis.	5 00
Gordon Setter puppy under 12 months, Gus. Hendrickson, Indianapolis . .	2 50
Pointer bitch, John T. Cox, Indianapolis	5 00
Second, Mrs. C. W. Meeker, Indianapolis	2 50
Irish Water Spaniel dog, P. T. Madison, Indianapolis	5 00
Chesapeake Bay dog, Horace Sabin, Indianapolis	5 00
Mastiff dog, Geo. Jackson, Beech Grove	5 00
Second, W. E. Hackedorn	2 50
Mastiff bitch, Eli Bronson, Indianapolis	5 00
St. Bernard dog, R. L. McOuatt, Indianapolis	5 00
New Foundland bitch, Nat. Owings, Indianapolis	5 00
Fox Hound dog, Harry Humphreys, Indianapolis.	4 00
Second, Harry Humphreys, Indianapolis	2 00
Italian Grey Hound, Ned Harris, Indianapolis	2 50
Second, Lawrence Hewett, Indianapolis	1 50
Cocker Spaniel, Harry Hildebrand, Indianapolis	1 50
Second, Pat Ryan, Indianapolis	1 00
Black and tan terriers, H. H. Harlan, Indianapolis	2 50
Second, D. O. Porter, Indianapolis.	1 50
Collies, bitch, Miss M. B. Self, Indianapolis.	5 00
Bull dogs, D. O. Porter, Indianapolis.	2 50
Second, A. J. Smith, Indianapolis	1 50
German terrier, dog or bitch, Miss M. B. Self, Indianapolis.	2 00
German spaniel, dog or bitch, Bert Wedden, Indianapolis	1 00
German Mastiff, Wm. McCauley, Indianapolis	5 00
Second, Silas Eaglin, Indianapolis	2 50

FARM PRODUCTS.

 WILLIS BLANCHE—Superintendent.

CLASS XXXIII—Vegetables.

Three cauliflowers, Chas. Becker, West Indianapolis	\$2 00
Second, Ellwanger & Son, Haughville	1 00
Six Broccoli, John Marvel, Royalton	2 00
Six vegetable eggs, John Marvel, Royalton	2 00
Second, Ellwanger & Sons, Haughville	1 00
Six cucumbers, Chas. Montgomery, Haughville	2 00
Second, Chas. Becker, West Indianapolis	1 00
Peck white Beans, John Marvel, Royalton	2 00
Second, S. H. Hayes, Elizabethtown, Ohio.	1 00
Peck white navy beans, John Marvel, Royalton	2 00
Second, W. H. Hartman, Indianapolis	1 00
Peck colored navy beans, Ellwanger & Sons, Haughville	2 00
Two quarts lima beans, Chas. Becker, West Indianapolis	2 00
Second, Ellwanger & Sons, Haughville	1 00
Half gallon garden peas (dry) W. H. Hartman, Indianapolis.	2 00
Second, John Marvel, Royalton	1 00
Half gallon field peas (dry), John Marvel, Royalton.	2 00
Second, Ellwanger & Son, Haughville	1 00
Half peck pickles for pickling, Chas. Becker, West Indianapolis	2 00
Second, John Marvel, Royalton	1 00
Peck tomatoes, Ellwanger & Sons, Haughville	2 00
Second, Chas. Montgomery, Haughville	1 00
Collection tomatoes, Ellwanger & Sons, Haughville	2 00
Second, John Marvel, Royalton	1 00
Half dozen ears green sweet corn, Chas. Montgomery, Haughville.	2 00
Second, W. H. Hartman, Indianapolis	1 00
Half peck dry sweet corn, Chas. Montgomery, Haughville	2 00
Second, John Marvel, Royalton	1 00
Three Hubbard squashes, Ellwanger & Sons, Haughville	2 00
Second, Chas. Becker, West Indianapolis	1 00
Three marble-head squashes, John Marvel, Royalton	1 00
Three crook-necked squashes, Chas. Montgomery, Haughville.	2 00
Second, Chas. Becker, West Indianapolis	1 00
Three California squashes, Ellwanger & Son, Haughville	2 00
Second, John Marvel, Royalton	1 00
Largest pumpkin, Chas. Montgomery, Haughville	2 00

Largest squash, W. H. Hartman, Indianapolis	\$2 00
Three field pumpkins, James Saunders, Westfield	2 00
Second, Chas. Montgomery, Haughville.	1 00
Three drum-head cabbages, W. H. Hartman, Indianapolis	2 00
Second, Ellwanger & Sons, Haughville	1 00
Three flat dutch cabbages, Ellwanger & Sons, Haughville	2 00
Second, Chas. Montgomery, Haughville	1 00
Three heads cabbage, any other kind, Ellwanger & Sons, Haughville.	2 00
Second, John Marvel, Royalton	1 00
Dozen stalks celery, Ellwanger & Son, Haughville	2 00
Second, A. Minger, Haughville	1 00
Best collection vegetables, by any one, Ellwanger & Son, Haughville.	10 00
Second, John Marvel, Royalton	5 00

Comittee—Wm. T. Foster, Otterbein, Ind.; Geo. A. Harding, Horace, Ill.; F. A. Carter, Indianola, Ill.

CLASS XXXIV—Root Crops.

Half bushel turnips, Ellwanger & Son, Haughville	\$2 00
Second, Chas. Becker, West Indianapolis	1 00
Dozen parsnips, Chas. Becker, West Indianapolis	2 00
Second, Ellwanger & Son, Haughville	1 00
Dozen radishes, Chas. Becker, West Indianapolis	2 00
Second, Ellwanger & Son, Haughville	1 00
Dozen carrots, Sylvester Johnson, Irvington.	2 00
Second, Ellwanger & Son, Haughville	1 00
Dozen roots salsify, Chas. Becker, West Indianapolis.	2 00
Second, A. Minger, Haughville	1 00
Dozen horseradish, Ellwanger & Son, Haughville	2 00
Second, Chas. Becker, Indianapolis	1 00
Half dozen long red beets, Sylvester Johnson, Irvington	2 00
Second, John Marvel, Royalton	1 00
Half dozen turnip beets, E. A. Eickhoff, Indianapolis	2 00
Second, S. H. Hayes, Elizabethtown, Ohio	1 00
Half dozen sugar beets, W. A. Ennis, Clermont	2 00
Second, Ellwanger & Son, Haughville	1 00
Half dozen mangel wurzel beets, Sylvester Johnson, Irvington.	2 00
Second, Frank Christian, Indianapolis	1 00
Half peck red onions, Chas. Montgomery, Haughville	2 00
Second, Ellwanger & Son, Haughville	1 00
Half peck yellow onions, Chas. Becker, West Indianapolis	2 00
Second, Ellwanger & Son, Haughville	1 00
Half peck white onions, Chas. Becker, West Indianapolis	2 00
Second, Chas. Becker, West Indianapolis	1 00

Dozen turnip radishes, Chas. Becker, West Indianapolis	\$1 00
Second, Chas. Montgomery, Haughville.	50
Dozen long radishes, Chas. Montgomery, Haughville	1 00
Best display of root crops, Ellwanger & Son, Haughville.	5 00
Second, John Marvel, Royalton	3 00
Half gallon white onion sets, Chas. Montgomery, Haughville.	2 00
Second, S. H. Hayes, Elizabethtown, Ohio	1 00
Half gallon yellow onion sets, Chas. Montgomery, Haughville	2 00
Second, Chas. Becker, West Indianapolis	1 00

Committee—F. A. Carter, Indianola, Ill.; Geo. A. Harding, Horace, Ill.; Wm. T. Foster, Otterbein, Ind.

CLASS XXXV—Potatoes.

Peck White Star, Chas. Montgomery, Haughville	\$2 00
Second, W. H. Hartman, Indianapolis	1 00
Peck Dunmore Seedling, S. W. Montgomery, Carmel.	2 00
Second, W. H. Hartman, Indianapolis	1 00
Peck Early Rose, Geo. T. Gundrum, Edinburg	2 00
Second, W. H. Hartman, Indianapolis	1 00
Peck Snowflake, S. H. Hayes, Elizabethtown, Ohio.	2 00
Second, John Marvel, Royalton	1 00
Peck Early Ohio, S. H. Hayes, Elizabethtown, Ohio	2 00
Second, Chas. Montgomery, Haughville	1 00
Peck Pride of the Valley, W. H. Hartman, Indianapolis.	2 00
Second, S. H. Hayes, Elizabethtown, Ohio	1 00
Peck Early Vermont, S. H. Hayes, Elizabethtown, Ohio	2 00
Second, W. H. Hartman, Indianapolis	1 00
Peck Beauty of Hebron, J. W. Montgomery, Carmel.	2 00
Second, W. H. Hartman, Indianapolis	1 00
Peck Blue Victor, W. A. Ennis, Clermont	2 00
Second, S. H. Hayes, Elizabethtown, Ohio	1 00
Peck Burbank Seedling, Geo. F. Gundrum, Edinburg	2 00
Second, W. H. Hartman, Indianapolis	1 00
Peck Empire State, W. A. Ennis, Clermont	2 00
Second, W. H. Hartman, Indianapolis	1 00
Peck Tholman, W. H. Hartman, Indianapolis	2 00
Peck Rosy Morn, W. H. Hartman, Indianapolis	2 00
Second, S. H. Hayes, Elizabethtown, Ohio	1 00
Peck Early Gem, W. H. Hartman, Indianapolis	2 00
Second John Marvel, Royalton	1 00
Peck Pearl of Savoy, W. H. Hartman, Indianapolis	2 00
Best collection Irish potatoes, not less than ten varieties, W. H. Hartman, Indianapolis.	10 00
Second, S. H. Hayes, Elizabethtown, Ohio	5 00

PREMIUM AWARDS.

151

Peck yellow sweet potatoes, W. H. Hartman, Indianapolis	\$2 00
Second, Ellwanger & Son, Haughville	1 00
Peck red sweet potatoes, Thomas Thatcher, Indianapolis	2 00
Second, Ellwanger & Son, Haughville	1 00
Best collection sweet potatoes, five or more varieties, Ellwanger & Son, Haughville	5 00
Second, Daniel W. Roach, New Ross	3 00

CLASS XXXVI—Grain Seed.

Twenty-five ears early Dentfield corn, W. H. Hartman, Indianapolis . . .	\$5 00
Second, John Marvel, Royalton	2 00
Twenty-five ears yellow corn, J. D. Whitesides, Franklin	5 00
Second, G. A. Stanton, Greenwood	2 00
Twenty-five ears white corn, J. D. Whitesides, Franklin	5 00
Second, S. W. Dungan, Franklin	2 00
Twenty-five ears corn, any color, J. D. Whitesides, Franklin	5 00
Second, J. D. Whitesides, Franklin	2 00
Twenty-five ears hominy corn, W. A. Ennis, Clermont	2 00
Second, John Marvel, Royalton	1 00
Peck white popcorn, J. Tilden, Shimer	2 00
Second, John Marvel, Royalton	1 00
Peck red popcorn, John Marvel, Royalton	2 00
Second, Chas. Montgomery, Haughville	1 00
Peck other color popcorn, Chas. Montgomery, Haughville	2 00
Second, J. D. Whitesides, Franklin.	1 00
Display and best variety of corn, all kinds, not less than one peck in the ear of each variety, J. D. Whitesides, Franklin.	10 00
Second, John Marvel, Royalton	5 00
Display and best variety of wheat, all kinds, not less than one-half gallon of each variety, W. A. Ennis, Clermont	10 00
Second, John Marvel, Royalton	5 00
Half bushel white wheat, Lee Trout, Franklin	5 00
Second, James Riley, Thorntown	2 00
Half bushel red wheat, W. H. Hartman, Indianapolis.	5 00
Second, James Riley, Thorntown	2 00
Half bushel rye, John Marvel, Royalton	2 00
Second, John P. Walker, Harrison, Ohio	1 00
Half bushel white oats, John Marvel, Royalton	2 00
Second, John P. Walker, Harrison, Ohio	1 00
Half bushel black oats, John Marvel, Royalton	1 00
Half bushel buckwheat, W. H. Hartman, Indianapolis	2 00
Second, John Marvel, Royalton	1 00
Half bushel barley, John P. Walker, Harrison, Ohio	2 00
Second, John Marvel, Royalton	1 00

Half bushel flaxseed, W. A. Ennis, Clermont	\$2 00
Second, W. H. Hartman, Indianapolis	1 00
Half bushel millet seed, W. H. Hartman, Indianapolis	2 00
Second, John Marvel, Royalton	1 00
Half bushel orchard grass seed, John P. Walker, Harrison, Ohio	2 00
Second, W. A. Ennis, Clermont	1 00
Half bushel Hungarian grass seed, John Marvel, Royalton	2 00
Half bushel Kentucky blue grass seed, W. T. Woodford, Paris, Ky	2 00
Second, J. A. Heavenridge, Liberty	1 00
Half bushel English blue grass seed, W. A. Ennis, Clermont	2 00
Second, W. H. Hartman, Indianapolis	1 00
Half bushel red top grass seed, W. H. Hartman, Indianapolis	2 00
Second, W. A. Ennis, Clermont	1 00
Half bushel red clover seed, W. H. Hartman, Indianapolis	2 00
Second, James Riley, Thorntown	1 00
Half bushel English clover seed, W. H. Hartman, Indianapolis	2 00
Second, J. A. Heavenridge, Liberty	1 00
Sample, ten pounds broom corn, John Marvel, Royalton	2 00
Second, Hermon Eickhoff, Indianapolis	1 00
Best collection grain and seeds by one exhibitor, W. A. Ennis, Clermont	10 00
Second, John Marvel, Royalton	5 00
Collection of farm products by any county or local society, John Marvel, Royalton	20 00
Second, W. H. Hartman, Indianapolis	10 00
<i>Committeemen</i> —Wm. T. Foster, Otterbein; S. A. Hall, Danville.	

CLASS XXXVII—Butter and Cheese.

Best 5-lb. batch of Jersey butter made in this State, from pure Jersey milk, offered by Jersey Bulletin, S. K. Jackson, Beech Grove	Gold Medal
--	------------

CLASS XXXVIII—Bees and Honey.

Queen Bee, G. K. Hubbard, Lagrange	\$3 00
Display of apiarian supplies, G. K. Hubbard, Lagrange	4 00
Comb foundation for use in brood nest, G. K. Hubbard, Lagrange.	2 00
Comb foundation for surplus honey, G. K. Hubbard, Lagrange	2 00
Honey extractor, G. K. Hubbard, Lagrange	2 00
Wax extractor, G. K. Hubbard, Lagrange	2 00
Section box for surplus honey, G. K. Hubbard, Lagrange	2 00
Display of wholesale package and crates for honey, G. K. Hubbard, La- grange	2 00
Collection of honey plants, properly labeled in order, with date of bloom, R. S. Russell, Zionsville	6 00

Committeemen—William T. Foster, Otterbein; S. A. Hall, Danville.

HORTICULTURAL DEPARTMENT.

R. M. LOCKHART, SUPERINTENDENT.

CLASS XXXIX.

Twenty varieties of apples, E. A. Eickhoff, Indianapolis	\$12 00
Twelve varieties of apples, S. H. Hayes, Elizabethtown, Ohio.	8 00
Six varieties of apples, W. A. Workman, Greencastle	5 00
Plate Maiden Blush, C. C. Crockett, Richmond	1 00
Plate Smith's cider, J. S. Dinsmore, Bloomington	1 00
Plate Ben Davis, Wm. H. Neeld, Bloomington	1 00
Plate Rome Beauty, Wm. H. Neeld, Bloomington	1 00
Plate Winesap, J. S. Dinsmore, Bloomington	1 00
Plate Rambo, Wm. H. Neeld, Bloomington	1 00
Plate yellow Bellflower, J. S. Dinsmore, Bloomington	1 00
Plate Fallawater Tulpehocken, R. S. Russell, Zionsville	1 00
Plate fall Pippin, S. H. Hayes, Elizabethtown, Ohio	1 00
Plate Clayton, Mrs. W. B. Flick, Lawrence	1 00
Plate white Pippin, W. A. Ennis, Clermont	1 00
Plate Baldwin, W. A. Workman, Greencastle	1 00
Plate Northern Spy, E. A. Eickhoff, Indianapolis	1 00
Plate Grimes' Golden, W. A. Workman, Greencastle.	1 00
Plate King Tompkins County, John Tilson, Franklin	1 00
Plate new seedling, not before exhibited, S. H. Hayes, Elizabethtown, Ohio.	1 00
Ten varieties pears, E. A. Eickhoff, Indianapolis	8 00
Five varieties autumn pears, E. A. Eickhoff, Indianapolis	4 00
Plate seedling, not before exhibited, S. H. Hayes, Elizabethtown, Ohio . .	1 00
Show of quinces, not less than twelve specimens, S. H. Hayes, Elizabeth-	
town, Ohio	3 00
Plate seedling, not before exhibited, S. H. Hayes, Elizabethtown, Ohio. . .	1 00
Five varieties grapes, James Saunders, Westfield.	5 00
Three varieties grapes, James Saunders, Westfield	3 00
Five clusters grapes, any kind, James Saunders, Westfield	2 00
Display of fruits, all kinds, E. A. Eickhoff, Indianapolis.	20 00
Display of fruit by any county or local society, Monroe County Horticul-	
tural Society.	20 00
Three watermelons, W. A. Ennis, Clermont.	5 00
Second, John Marvel, Royalton	2 00
Three nutmeg melons, Thomas Thatcher, Indianapolis.	3 00
Second, Charles Montgomery, Haughville	2 00
Largest striped Gypsy melon, Wm. Jennings & Son, Zionsville	2 00
Largest icing melon, Wm. Jennings & Son, Zionsville	2 00
Collection melons, all kinds, John Marvel, Royalton.	6 00

Committeeman—A. Furnas.

CLASS XL—Sweepstake Premiums.

Peck of apples, any variety, Mrs. W. J. Flick, Lawrence	\$5 00
Second, James Saunders, Westfield.	3 00
Third, A. Vines, Vines' Spring	2 00
Peck pears, any variety, E. A. Eickhoff, Indianapolis	5 00
Second, Mrs. W. J. Flick, Lawrence	3 00
Third, S. H. Hayes, Elizabethtown, Ohio	2 00

Committeeman—A. Furnas.

CLASS XLI—Plants and Cut Flowers.

PROFESSIONAL.

Twelve palms, Berterman Bros., Indianapolis	\$10 00
Second, Mrs. Henry Hilker, Indianapolis	7 00
Eighteen fancy caladiums, Chas. Reiman, Indianapolis	8 00
Second, Berterman Bros., Indianapolis	5 00
Third, Mrs. Henry Hilker, Indianapolis	3 00
Twenty-five ferns and lycopodium, Chas. Reiman, Indianapolis	8 00
Second, Berterman Bros., Indianapolis	5 00
Third, Mrs. Henry Hilker, Indianapolis	3 00
Twelve blooming begonias, Berterman Bros., Indianapolis	7 00
Second, Mrs. Henry Hilker, Indianapolis	4 00
Third, Chas. Reiman, Indianapolis	2 00
Twelve foliage begonias, Berterman Bros., Indianapolis	7 00
Second, Mrs. Henry Hilker, Indianapolis	4 00
Third, Chas. Reiman, Indianapolis	2 00
Twenty-five variegated show plants, Berterman Bros., Indianapolis	8 00
Second, Chas. Reiman, Indianapolis	5 00
Third, Mrs. Henry Hilker, Indianapolis	3 00
Twelve cannas, Berterman Bros., Indianapolis	6 00
Second, Mrs. Henry Hilker, Indianapolis	4 00
Twenty-five astors in pots and bloom, J. Larsen, Indianapolis	6 00
Second, Chas. Reiman, Indianapolis	4 00
Third, Berterman Bros., Indianapolis	2 00
Twelve double geraniums, Chas. Reiman, Indianapolis	6 00
Second, Berterman Bros., Indianapolis	4 00
Third, Mrs. Henry Hilker, Indianapolis	2 00
Twelve single geraniums, Mrs. Henry Hilker, Indianapolis	6 00
Second, Berterman Bros., Indianapolis	4 00
Third, Chas. Reiman, Indianapolis	2 00
Twenty-five colons and athernatheras, Chas. Reiman, Indianapolis	5 00
Second, Berterman Bros., Indianapolis	3 00
Third, Mrs. Henry Hilker, Indianapolis	2 00

PREMIUM AWARDS,

155

Three flower stands, filled, Berterman Bros., Indianapolis	\$5 00
Second, Mrs. Henry Hilker, Indianapolis.	3 00
Three hanging baskets, J. Larsen, Indianapolis	5 00
Second, Mrs. Henry Hilker, Indianapolis.	3 00
Third, Chas. Reiman, Indianapolis.	2 00
Special premiums for best display and arrangement of above, Mrs. Henry Hilker, Indianapolis	40 00
Second, Berterman Bros., Indianapolis	20 00
Third, Chas. Reiman, Indianapolis	10 00
Three funeral designs, Berterman Bros., Indianapolis	25 00
Second, Chas. Reiman, Indianapolis	15 00
Third, Mrs. Henry Hilker, Indianapolis	5 00
Five basket designs, Berterman Bros., Indianapolis.	20 00
Second, Chas. Reiman, Indianapolis	15 00
Third, Mrs. Henry Hilker, Indianapolis	5 00
Five bouquets, Berterman Bros., Indianapolis.	10 00
Second, Mrs. Henry Hilker, Indianapolis.	7 00
Collection cut flowers in glasses, Berterman Bros., Indianapolis	10 00
Second, Chas. Reiman, Indianapolis	7 00
Third, Mrs. Henry Hilker, Indianapolis	5 00
Collection cut roses, Berterman Bros., Indianapolis.	10 00
Second, Chas. Reiman, Indianapolis	7 00
Third, Mrs. Henry Hilker, Indianapolis	5 00
Collection cut blooms, gladiolus, Berterman Bros., Indianapolis.	15 00
Second, Mrs. Henry Hilker, Indianapolis.	
Third, Chas. Reiman, Indianapolis.	
Newest show design, Berterman Bros., Indianapolis	40 00
Second, Chas. Reiman, Indianapolis	20 00
Newest funeral design, Berterman Bros., Indianapolis	40 00
Second, Chas. Reiman, Indianapolis	20 00
Third, Mrs. Henry Hilker, Indianapolis	10 00

Committee—O. P. Rooks, Geo. R. Graham, Geo. F. Reeves.

CLASS XLII—Amateur.

Collection begonias, E. M. Bronson, Indianapolis	\$5 00
Second, Mrs. E. A. Parker, Indianapolis	3 00
Collection asters in bloom, E. M. Bronson, Indianapolis	1 00
Second, L. Rawlings, Danville.	4 00
Collection camas, E. M. Bronson, Indianapolis	4 00
Collection climbing and trailing plants, E. M. Bronson, Indianapolis	4 00
Collection hanging baskets, E. M. Bronson, Indianapolis	3 00
Second, Mrs. E. A. Parker, Indianapolis	2 00
General collection plants, E. M. Bronson, Indianapolis	8 00

Collection geraniums, Mrs. Mary B. Danley, Indianapolis	\$3 00
Second, Mrs. Frank Williamson, Zionsville	2 00
Collection roses, Mrs. Mary B. Danley, Indianapolis	4 00
Second, E. M. Bronson, Indianapolis	2 00
Collection verbenas, Mrs. Frank Williamson, Zionsville	3 00
Second, Mrs. P. D. Stagg, Greensburg.	2 00
Collection dahlias, Mrs. P. D. Stagg, Greensburg	3 00
Second, Mrs. Frank Williamson, Zionsville	2 00
Third, G. Cowing, Muncie	1 00
Collection gladiolus, Mrs. P. D. Stagg, Greensburg.	3 00
Design of cut flowers, W. J. Crisler, Greensburg.	8 00
Second, Mrs. P. D. Stagg, Greensburg	4 00
Third, Mrs. Mary B. Danley, Indianapolis	2 00

Committee—George Graham, O. P. Rooks, Geo. F. Reeves.

GEOLOGY AND NATURAL HISTORY DEPARTMENT.

PROF. S. S. GORBY, Superintendent.

CLASS XLIII.

General collection fossils, Geo. K. Green, New Albany	\$12 00
Second, Fletcher M. Noe, Indianapolis	8 00
General collection minerals, Will G. Beach, Indianapolis.	10 00
Second, Fletcher M. Noe, Indianapolis	4 00
General collection shells, Will G. Beach, Indianapolis	5 00
Second, F. A. Beidenmeister, Indianapolis	3 00
Collection Mound Builders' (Stone Age) implements, H. S. Humphrey, Indianapolis.	10 00
Second, Fletcher M. Noe, Indianapolis	5 00
Collection of stuffed and mounted birds, animals and reptiles, illustrating the natural history of the State, Fletcher M. Noe, Indianapolis . .	10 00
Second, Ed Bonge, Cumberland	5 00
Collection skinned birds and animals, Fletcher M. Noe, Indianapolis . . .	5 00
Second, Fletcher M. Noe, Indianapolis	3 00
Collection diurnal lepidoptera, Ed Shaneberger, Indianapolis.	4 00
Second, Fred Beidenmeister, Indianapolis	2 00
Collection nocturnal lepidoptera, Herman B. Ritter, Indianapolis	4 00
Second, Fred Beidenmeister, Indianapolis.	2 00

PREMIUM AWARDS.

157

Collection insects, Herman B. Ritter, Indianapolis	\$3 00
Second, Fred Beidenmeister, Indianapolis	2 00
Collection botanical specimens, Lillie Roney, Indianapolis	5 00
Second, F. A. Beidenmeister, Indianapolis	3 00
Collection of curiosities, to consist of relics of the late war and of historical interest, Will G. Beach, Indianapolis	5 00
Second, Fred L. King, Indianapolis	3 00
<i>Committee</i> —Prof. O. P. Hay, Irvington; A. C. Benedict, Indianapolis.	

CLASS XLIV.

Building stone, H. B. Campbell, Clear Creek	Diploma
Collection and variety of coal from Indiana, Will G. Beach, Indianapolis .	\$10 00
Second, Frank L. Smith, Indianapolis	5 00
Exhibit Indiana stone, Will G. Beach, Indianapolis	10 00
Second, Fletcher M. Noe, Indianapolis	5 00
<i>Committee</i> —Prof. O. P. Hay, Irvington; A. C. Benedict, Indianapolis.	

WOMAN'S DEPARTMENT.

CLASS XLV.

OLD LADIES' DEPARTMENT.

Silk quilt, Mrs. M. Spalding, Anderson	\$2 00
Second, Mrs. L. A. Moore, Terre Haute	1 00
Crazy quilt, Mrs. J. E. Killen, Noblesville	2 00
Second, Mrs. Bulha, Muncie	1 00
Worsted quilt, Mrs. C. Dille, Greensburg	2 00
Second, Mrs. M. Spalding, Anderson	1 00
Calico quilt, Mrs. M. Spalding, Anderson	2 00
Second, Mrs. S. D. Whistler, Peru	1 00
Quilt, white, Mrs. L. A. Moore, Terre Haute	2 00
Second, Mrs. M. Spalding, Anderson	1 00
Rug, Mrs. Isley, Anderson	2 00
Second, Mrs. Julia Reed, Indianapolis	1 00
Spread, knit, Mrs. John Vest, Scottsburg	3 00
Second, Mrs. A. Schonnick, Indianapolis	2 00

Spread, crochet, Mrs. M. Spalding, Anderson	\$2 00
Second, Mrs. Bulha, Muncie.	1 00
Pair silk mittens, Mrs. J. A. Judson, Paris, Ill	2 00
Second, Mrs. C. Dille, Greensburg	1 00
Pair silk stockings, Mrs. J. A. Judson, Paris, Ill.	2 00
Second, Mrs. S. D. Whistler, Peru	1 00
Pair silk socks, Mrs. S. D. Whistler, Peru.	2 00
Pair woolen stockings, Mrs. M. Spalding, Anderson	1 50
Second, Mrs. C. Dille, Greensburg	1 00
Pair woolen socks, Mrs. M. Spalding, Anderson	1 00
Pair cotton socks, Mrs. M. Spalding, Anderson	1 00
Pair worsted mittens, Mrs. J. A. Judson, Paris, Ill.	1 00
Hemstitching, Mrs. Jane Day, Shelbyville	2 00
Second, Mrs. J. A. Judson, Paris, Ill	1 00
Chainstitching, Mrs. C. Dille, Greensburg.	2 00
Second, Mrs. C. Dille, Greensburg	1 00
Drawn work, Mrs. L. A. Moore, Terre Haute	2 00
Second, Mrs. Bulha, Muncie.	1 00
Table cover, Mrs. L. A. Moore, Terre Haute.	2 00
Second, Mrs. C. Dille, Greensburg	1 00
Table scarf, embroidered, Mrs. C. Dille, Greensburg	2 00
Table scarf, not embroidered, Mrs. Jane Day, Shelbyville	2 00
Second, Mrs. Isley, Anderson	1 00
Lace display, hand-made, Mrs. L. A. Moore, Terre Haute	2 00
Second, Mrs. M. Spalding, Anderson	1 00
Embroidery, display, Mrs. M. Spalding, Anderson.	2 00
Embroidery, cotton or linen, display, Mrs. L. A. Moore, Terre Haute	2 00
Second, Mrs. C. Dille, Greenburg	1 00
Embroidery, silk specimen, Mrs. L. A. Moore, Terre Haute.	2 00
Second, Mrs. C. Dille, Greensburg	1 00
Embroidery, worsted specimen, Mrs. L. A. Moore, Terre Haute	2 00
Second, Mrs. C. Dille, Greensburg	1 00
Appiquet, specimen, Mrs. L. A. Moore, Terre Haute	2 00
Second, Mrs. M. Spalding, Anderson	1 00
Painting, display, Mrs. Isley, Anderson.	2 00

Committee—Mrs. E. C. Winslow, Mrs. J. A. Coleman, Jennie Mowrer.

CLASS XLVI—Knitting and Crochet Work.

Infant's knit skirt, Mrs. W. A. Burt, Indianapolis	\$1 00
Infant's crochet skirt, Mrs. R. H. Greble, Noblesville	1 00
Infant's knit socke, Mrs. C. Dille, Greensburg	1 00
Pair silk mittens, hand knit, Mrs. H. A. Bowman, Covington	2 00
Second, Mrs. P. D. Stagg, Greensburg.	1 00

Pair silk stockings, hand knit, Bessie Judson, Paris, Ill	\$2 00
Second, Mrs. C. A. Miller, Crawfordsville	1 00
Thread or silk crochet baby cap, Mrs. S. Groves, Anderson	2 00
Second, Mrs. Newton Teter, Noblesville.	1 00
Crochet, fascinator, Mrs. N. Teter, Noblesville.	2 00
Second, Mrs. S. Groves, Anderson	1 00
Crochet child's sacque, Jennie Judson, Paris, Ill.	2 00
Second, Mrs. N. Teter, Noblesville	1 00
Crochet tidy, Mrs. J. W. Gifford, Tiverton Four Corners, R. I.	2 00
Second, Mollie B. Keller, New Castle.	1 00
Afghan, Mrs. C. Dille, Greensburg	2 00
Second, Mrs. S. Groves, Anderson	1 00
Afghan, infant's, Mrs. C. Dille, Greensburg	2 00
Second, Mrs. P. D. Stagg, Greensburg	1 00
Counterpane, knit, Mrs. C. Deubel, Anderson	2 00
Second, Mrs. R. S. Hall, Greencastle	1 00
Counterpane, crochet, Mrs. H. R. Gillette, Indianapolis	2 00
Second, Mrs. H. C. Keever, Indianapolis	1 00
Lace bed set, Mrs. Chas. Cones, Indianapolis	2 00
Second, Mrs. S. Groves, Anderson	1 00
Crochet lace, display in articles made up, Mrs. S. Groves, Anderson	2 00
Second, Miss Coulter, Indianapolis	1 00
Knit lace, display in articles made up, Miss Fannie McCormick, Indian- apolis	2 00
Second, Mrs. A. D. McLeod, Sandusky, Ohio	1 00
Crochet skirt, Mrs. W. H. Rippetoe, Terre Haute	2 00
Second, Mrs. M. Eckhouse, Indianapolis	1 00
Crochet slippers, Miss A. E. Hough, Alexandria, Va	2 00
Second, Mrs. A. D. McLeod, Sandusky, Ohio	1 00

Committee—Mrs. E. C. Winslow, Jennie Mowrer.

CLASS XLVII—Lace Work.

Silk lace, Lulu H. Markle, Anderson	\$1 50
Second, Mrs. H. R. Gillette, Indianapolis	1 00
Point lace, display, Belle S. Reed, Alpine.	3 00
Second, Mrs. Jane Day, Shelbyville	2 00
Point lace specimen, Miss Minnie J. Wright, Indianapolis	2 00
Second, Mrs. M. A. Johnson, Indianapolis	1 00
Applique lace, Mrs. C. A. Miller, Crawfordsville	2 00
Second, Mrs. Jane Day, Shelbyville	1 00
Tatting display, in articles made up, Mrs. E. B. Kirk, Shelbyville	2 00
Second, Mrs. A. J. Bowman, Indianapolis	1 00
Feather edge display, in articles made up, Mrs. C. A. Miller, Crawfordsville	2 00

Rick rack work display, in articles made up, Mrs. S. Grove, Anderson . . .	\$2 00
Second, Mrs. C. Dille, Greensburg	1 00
Novelty braid display, in articles made up, Mrs. A. D. McLeod, Sandusky, Ohio	2 00
Second, Miss Pearl Dobell, Indianapolis	1 00
Scrim tidy, Mrs. S. W. Hare, Noblesville	2 00
Second, Mrs. W. N. Burt, Indianapolis	1 00
Thread tidy, Mrs. H. A. Bowman, Indianapolis	1 50
Second, Miss Jennie Means, Paris, Ill.	1 00

Committee—Mrs. E. C. Winslow, Mrs. J. A. Coleman, Jennie Mowrer.

CLASS XLVIII—Embroidery.

Linen floss display, Mrs. C. Dille, Greensburg	\$2 00
Second, Mrs. L. A. Moore, Terre Haute.	1 00
Cotton, white, display, Mrs. A. M. Robertson, Indianapolis.	2 00
Second, Mrs. C. Dille, Greensburg	1 00
Cotton, colored, specimen, Ed. Hendrickson, Indianapolis	2 00
Second, Ed. Hendrickson, Indianapolis.	1 00
Silk, child's cloak, Mrs. A. P. Wilson, Indianapolis	2 00
Second, Mrs. S. C. Hill, Indianapolis.	1 00
Napkin set, not less than six, Mrs. Laura Howard, Jeffersonville	2 00
Second, Mrs. Sammons, Indianapolis.	1 00
Doyley set, not less than six, Miss Jennie Means, Paris, Ill.	2 00
Second, Mrs. Sammons, Indianapolis.	1 00
Handkerchief, Mrs. P. D. Stagg, Greensburg	2 00
Second, Mrs. C. A. Miller, Crawfordsville.	1 00
Silk, white, specimen, Mrs. S. E. Hills, Delaware, Ohio	2 00
Second, Kate Sims, Columbus	1 00
Silk, colored, specimen, Miss Ella Wills, Lebanon, Ohio	3 00
Second, Mrs. S. C. Hills, Delaware, Ohio	2 00
Silk skirt, Mrs. J. H. Spence, Covington	2 00
Second, Mrs. C. Dille	1 00
Silk, infant's shawl, Mrs. S. C. Hills, Delaware, Ohio	2 00
Second, Edith Sims, Columbus.	1 00
Table cover, Mrs. L. A. Moore, Terre Haute	3 00
Second, Mrs. Mary E. Worden, South Bend.	2 00
Table scarf, Bertha Lauer, Rochester.	2 00
Second, Mrs. L. A. Moore, Terre Haute.	1 00
Piano scarf, Mrs. L. A. Moore, Terre Haute.	2 00
Ottoman, upholstered, Miss Allie Davidson, Muncie	2 00
Sofa cushion, Mrs. L. A. Moore, Terre Haute	2 00
Second, Bertha Lauer, Rochester.	1 00
Toilet cushion, Mrs. L. A. Moore, Terre Haute	2 00
Second, Mrs. E. B. Kirk, Shelbyville.	1 00

Mantel lambrequin, Mrs. L. A. Moore, Terre Haute	\$3 00
Second, Mrs. C. Dille, Greensburg	2 00
Appliquet, colored, specimen, Mrs. R. H. Talbott, Cincinnati, Ohio	2 00
Second, Miss Jennie Means, Paris, Ill	1 00
Outline, display, Mrs. Ella Wills, Lebanon	2 00
Second, Ed. Hendrickson, Indianapolis.	1 00
Outline, specimen, Mrs. Ella Wills, Lebanon	2 00
Second, Mrs. P. D. Stagg, Greensburg.	1 00
Kensington, display, Mrs. Ella Wills, Lebanon	3 00
Second, Mrs. L. A. Moore, Terre Haute	2 00
Kensington, specimen, Mrs. Ella Wills, Lebanon	2 00
Second, Mrs. P. D. Stagg, Greensburg	1 00
Tapestry, display, Mrs. L. A. Moore, Terre Haute	2 00
Second, Mrs. F. Baber, Indianapolis	1 00
Chenille, display, Mrs. Ella Wills, Lebanon	3 00
Second, Mrs. L. A. Moore, Terre Haute	2 00
Chenille, specimen, Mrs. Ella Wills, Lebanon	2 00
Second, Mrs. P. D. Stagg, Greensburg	1 00
Arasene, display, Mrs. L. A. Moore, Terre Haute	2 00
Second, Mrs. C. Dille, Greensburg	1 00
Arasene, specimen, Mrs. Ed. Hendrickson, Indianapolis	2 00
Second, Mrs. Wm, Perry, Indianapolis	1 00
High art needle work, display, Mrs. Ella Wills, Lebanon	3 00
Second, Mrs. L. M. Neely, Muncie.	2 00
Ribbon, specimen, Mrs. S. Groves, Anderson	2 00
Second, Mrs. C. Dille, Greensburg	1 00
Ribbon display, Mrs. Ella Wills, Lebanon	2 00
Smyrnasene specimen, Mrs. Sammons, Indianapolis	2 00
Second, Mrs. C. Dille, Greensburg	1 00
Fire screen, mounted, Mrs. A. M. Robertson, Indianapolis	3 00
Second, Miss Fannie McCormick, Indianapolis	2 00
Tinting and embroidery, Mrs. L. A. Moore, Terre Haute	2 00
Second, Mrs. Sammons, Indianapolis.	1 00
Rope, silk or linen, Mrs. C. W. Leverings, Paris, Ills	2 00
Second, Mrs. L. A. Moore, Terre Haute	1 00
Queen Anne darning, Mrs. Sammons, Indianapolis	2 00
Roman embroidery, Mrs. Sammons, Indianapolis	2 00
Second, Mrs. L. Martin, Cape Girardeau, Mo	1 00
Tufted embroidery, Mrs. Ella Wills, Lebanon	2 00
Second, Mrs. S. C. Hills, Delaware, Ohio	1 00
Towel embroidery, Mrs. C. Dille, Greensburg	2 00
Second, Mrs. C. N. Camburn, Rushville	1 00

Committee—Mrs. J. W. Shideler, Indianapolis; Miss Lulu Davidson, Crawfordsville; Miss Lida Mitchell, Princeton.

CLASS XLIX—Sewing, Machine and Hand.

Machine work, three articles, Mrs. E. Speer, Greensburg	\$2 00
Second, Mrs. J. H. Spence, Covington	1 00
Quilt, velvet, Mrs. Ella Wills, Lebanon	3 00
Quilt, silk, needlework, Mrs. R. H. Talbott, Cincinnati, Ohio	3 00
Second, Mrs. S. Groves, Anderson	2 00
Crazy quilt, Mrs. R. H. Talbott, Cincinnati, Ohio	2 00
Second, Clara B. Clackner, Indianapolis	1 00
Quilt, silk or velvet, Roman stripe, Mrs. H. D. Hesse, Indianapolis	2 00
Buttonholes, display on different materials, Mrs. M. Stevenson, Indianapolis	2 00
Second, Mrs. C. W. Leverings, Paris, Ills	1 00
Hem-stitching display, hand-sewing, Mrs. R. H. Talbott, Cincinnati, Ohio	2 00
Second, Mrs. E. B. Kirk, Shelbyville	1 00
Drawn work, Miss Emma Potts, Rockville	2 00
Second, Miss Emma Potts, Rockville	1 00
Drawn work, underwear, Mrs. S. Groves, Anderson	2 00
Second, Mrs. H. A. Bowman, Indianapolis	1 00
Infant's outfit, most sensible and neat, M. Bundy, New Castle	3 00
Second, Mrs. A. D. McLeod, Sandusky, Ohio	2 00
Pillow shams, embroidery finish, Mrs. L. Martin, Cape Girardeau, Mo.	2 00
Second, Mrs. L. A. Moore, Terre Haute	1 00
Pillow shams, fancy finished, Mrs. N. Teter, Noblesville	2 00
Second, Mrs. C. N. Cambern, Rushville	1 00

Committee—Mrs. Fannie B. Shideler, Indianapolis; Miss Lida Mitchell, Princeton; Miss Lulu Davidson, Crawfordsville.

CLASS L—Miscellaneous.

Wax flowers, Susie E. Martin, Indianapolis	\$2 00
Second, Bertha Deubel, Anderson	1 00
Wax fruit, Susie E. Martin, Indianapolis	2 00
Second, Susie E. Martin, Indianapolis	1 00
Wax work, ornamental, Susie E. Martin, Indianapolis	2 00
Handkerchief sachet, Mrs. L. A. Moore, Terre Haute	1 50
Second, Miss F. McCormack, Indianapolis	1 00
Glove box, Mrs. L. A. Moore, Indianapolis	1 50
Second, Kate Sims, Columbus	1 00
Broom Holder, Mrs. L. A. Moore, Terre Haute	1 50
Second, Mrs. Ella Wills, Lebanon	1 00
Toilet cushion, not embroidered, Mrs. E. B. Kirk, Shelbyville	2 00
Second, Mrs. R. H. Grebble, Noblesville	1 00
Sofa pillow, not embroidered, Mrs. Sammons, Indianapolis	2 00
Second, Miss Emma Youngerman, Indianapolis	1 00
Toilet scarf, splasher and mats, Mrs. Sammons, Indianapolis	2 00
Second, Mrs. Joseph Lauer, Rochester	1 00

Toilet cushion and bottles, Mrs. J. E. Killen, Noblesville	\$1 50
Second, Mrs. L. A. Moore, Terre Haute	1 00
Infant's nursery basket, Mrs. Sammons, Indianapolis	1 00
Tidy, not crochet, Mrs. H. S. Murdock, Logansport	2 00
Second, Nelly Berkey, Lafayette	1 00
Stuffed and mounted birds, collection named, Mrs. L. Ingersoll, Indianapolis	7 00
Stuffed and mounted animals, collection named, Mrs. L. Ingersoll, Indianapolis	7 00
Upholstery work, chair, Mrs. A. M. Noe, Indianapolis	3 00
Second, Mrs. A. M. Noe, Indianapolis	2 00
Rug, Mrs. E. B. Kirk, Shelbyville	2 00
Second, Mrs. S. Groves, Anderson	1 00
Tea cosey, made up, Mrs Sammons, Indianapolis	1 50
Doyleys, not embroidered, not less than six, Mrs. F. G. Wood, Indianapolis	2 00
Second, Mrs. Sammons, Indianapolis	1 00
Slumber roll, Mattie Pratt, Anderson	1 00
Reticule, Mrs. R. H. Grebble, Noblesville.	1 50
Second, Mrs. Sammons, Indianapolis.	1 00
Wall Pocket, fancy, Mrs. C. W. Levings, Paris, Ill.	1 50
Second, Mrs. M. Eckhouse, Indianapolis	1 00
Fancy aprons, Mrs. R. H. Grebble, Noblesville.	1 50
Second, Allie Davidson, Muncie	1 00
Fancy sachets, Mrs. Ella Morey, South Bend	1 50
Second, Mrs. M. Bundy, New Castle	1 00
Drape or throw, Mrs. L. A. Moore, Terre Haute	1 50
Second, Miss T. McCormick	1 00
Banners, not painted, Mollie Keller, New Castle	3 00
Second, Melinda Weghorst, Indianapolis	2 00
Housewife, Mrs. M. A. Furguson, Indianapolis	1 50
Second, Mrs. P. D. Staggs, Greensburg.	1 00
Fancy pen-wiper, Mrs. L. Martin, Cape Girardeau, Mo.	1 00

Committee—Mrs. E. C. Winslow, Jennie Mowrer, Mrs. J. A. Coleman.

CLASS LI—Business Exhibit.

Display millinery, Mrs. M. McKeirnan, Indianapolis.	\$40 00
Second, Mrs. Dieterich & Co, Indianapolis	30 00
Display dressmaking, Mrs. L. West, Indianapolis	20 00
Second, Jennie Allen, Anderson	15 00
Display hairwork, Mrs. A. S. Fowler, Indianapolis.	20 00
Second, Miss Phelan, Indianapolis	15 00

Committee—Miss Lida Mitchell, Miss Lulu Davidson, Miss Jennie Mowrer.

CLASS LII—Decorative Art Work.

Hammered or repousse work, display, Mrs. C. S. Roney, Indianapolis . . .	\$2 00
Second, Mrs. S. Groves, Anderson	1 00
French decorative work, display, Mrs. Mabel Ennis, Indianapolis	1 50
Second, Mrs. Jane Day, Indianapolis	1 00
French decorative work, mineral, display, Mrs. Mabel Ennis, Indianapolis.	1 50
Lava work, Miss Allie Davidson, Muncie	1 50
Etching, display, Sabra Cath. r, Franklin	3 00
Modeling in clay, display, Retta Mathews, Arlington.	3 00
Second, Weltha Wilson, Indianapolis	2 00
Wood carving, display, Retta Mathews, Arlington.	5 00
Second, Sallie Crow, Greencastle.	3 00
Wood carving, specimen, Mrs. S. P. Stoddard, Indianapolis.	2 00
Second, Sallie Crow, Greencastle.	1 00
Pottery painting, Limorges, specimen, Miss Emma Heyse, Indianapolis . .	3 00
Second, Mrs. S. Vagen, Indianapolis	2 00
Pottery painting, Limorges, specimen, Mrs. A. E. Ferry, Indianapolis . . .	2 00
Second, Miss Em. Heyse, Indianapolis	1 00
Pottery painting, biscuit, display, Mrs. A. E. Ferry, Indianapolis	3 00
Pottery painting, biscuit, specimen, Mrs. A. E. Ferry, Indianapolis	2 00
Second, Miss Sabra Cather, Franklin	1 00
Painting on china, china tableware, display, Mrs. John Julian, Indianapolis.	5 00
Second, Mrs. A. E. Ferry, Indianapolis	3 00
Painting on china tableware, specimen, Mrs. John Julian, Indianapolis . .	3 00
Second, Mrs. A. E. Ferry, Indianapolis	2 00
Painting on china ornamental pieces, Miss Sue M. Ketcham, Indianapolis .	3 00
Second, Mrs. John Julian, Indianapolis.	2 00
Painting on china, Royal Worcester, Mrs. A. E. Ferry, Indianapolis. . . .	2 00
Second, Mrs. A. E. Ferry, Indianapolis	1 00
Painting on china, relief gold, Miss Sue M. Ketcham, Indianapolis	1 50
Painting on china, lustre gold, Miss Sue M. Ketcham, Indianapolis	1 50
Platter, Japanese design, old blue, Mrs. A. E. Ferry, Indianapolis	1 50
Rose jar, Mrs. A. E. Ferry, Indianapolis	1 50
Painting on tiles, display, Nellie Berkey, Lafayette	3 00
Painting on wood, display, Mrs. John Julian, Indianapolis	3 00
Second, Miss Retta Mathews, Arlington	2 00
Painting on wood, specimen, Mrs. John Julian, Indianapolis	2 00
Second, Miss Retta Mathews, Arlington	1 00
Painting on silk or satin, display, Miss Ila Atchinson, Crawfordsville . . .	3 00
Second, Nellie Berkey, Lafayette	2 00
Painting on silk or satin, specimen, Nellie Berkey, Lafayette	1 50
Second, Miss Ila Atchinson, Crawfordsville	1 00
Painting on colored velvet, specimen, Mrs. John Julian, Indianapolis . . .	3 00
Second, Mrs. A. E. Ferry, Indianapolis	2 00

PREMIUM AWARDS.

165

Painting on white velvet, specimen, Miss Ila Atchinson, Crawfordsville . .	\$3 00
Second, Mrs. M. Bundy, New Castle	2 00
Painting on velvet, Kensington, display, Miss Irma Thomas, Terre Haute .	2 00
Painting on bolting-cloth, display, Miss Mattie Tuttle, Indianapolis	3 00
Second, Miss Ila Atchinson, Crawfordsville	2 00
Painting on bolting-cloth, specimen, Miss Mattie Tuttle, Indianapolis . . .	2 00
Second, Mrs. A. E. Ferry, Indianapolis	1 00
Painting on celluloid, Miss Bessie Hendricks, Indianapolis	1 50
Second, Mrs. L. A. Moore, Terre Haute.	1 00
Painting on glass, Miss Bertha Lauer, Rochester	1 50
Painting on chamois skin, Miss Irma Thomas, Terre Haute	1 50
Second, Mrs. A. E. Ferry, Indianapolis	1 00
Painting on matting, Mrs. Sammons, Indianapolis	1 50
Second, Miss Alice Ross, Indianapolis	1 00
Tapestry painting, Mrs. John Julian, Indianapolis	1 50
Painted fan, Mrs. Joseph Lauer, Rochester	1 50
Second, Mrs. A. E. Ferry, Indianapolis	1 00
Painted toilet set, Miss Ila Atchinson, Crawfordsville	1 50
Second, Mrs. M. Bundy, New Castle	1 00
Painted fancy cards, display, Miss Bessie Hendricks, Indianapolis.	1 50
Second, Margaret Hills, Delaware, Ohio	1 00
Painted magazine cover, Mary N. Robinson, Indianapolis	1 50
Blotting pad, Mrs. A. E. Ferry, Indianapolis	1 50
Second, Mrs. C. L. Thompson, St. Louis, Mo	1 00
Fancy frame, Miss Retta Mathews, Arlington	1 50
Painted fire screen, mounted, Mrs. James Lyon, Indianapolis.	3 00
Second, Lillie F. Ball, Indianapolis	2 00
Original design for decoration, in oil, Miss Mary Robinson, Indianapolis .	3 00
Second, Kate Railsback, Indianapolis	2 00
Original design for decoration, in water colors, Mrs. A. E. Ferry, Indianapolis	3 00
Second, Miss Mary Robinson, Indianapolis	2 00
Drawings, original display, Retta Mathews, Arlington	3 00
Second, Bessie Hendricks, Indianapolis.	2 00
Drawings, original specimen, Bessie Hendricks, Indianapolis.	2 00
Second, Retta Mathews, Arlington	1 00
Drawings, copy display, Mrs. E. Speer, Greensburg	3 00
Drawings, copy specimen, Mrs. E. Speer, Greensburg	2 00
Second, Mrs. L. Martin, Cape Girardeau, Mo	1 00
Pen and ink sketch, Retta Mathews, Arlington	1 50
Second, Sabra Cather, Franklin	1 00
Frieze decoration, Retta Mathews, Arlington	1 50
Second, Alice Ross, Indianapolis.	1 00
Decorated hangings, Dollie Scharff, Indianapolis	1 50
Painting on pair panels, water colors, Mrs. L. Martin, Cape Girardeau, Mo.	3 00
Painting on pair panels, oil, Sabra, Cather, Franklin	3 00
Second, Miss M. Trueblood, Indianapolis	2 00

Spring scene, oil Sue M. Ketcham, Indianapolis	\$2 00
Second, Mrs. James Lyon, Indianapolis.	1 00
Summer scene, oil, Sue M. Ketcham, Indianapolis.	2 00
Second, Retta Mathews, Arlington	1 00
Autumn scene, oil, Mrs. James Lyon, Indianapolis	2 00
Second, Sabra Cather, Franklin	1 00
Winter scene, oil, Sue M. Ketcham, Indianapolis	2 00
Second, Sabra Cather, Franklin	1 00

Committee—Miss Charie Graves, Mrs. Lon. M. Neely.

CLASS LIII—Art Work—Amateur.

Crayon drawings, display, Miss M. Anderson, Indianapolis	\$3 00
Second, Miss Ada Roney, Indianapolis	2 00
Crayon drawings, specimen, Selina Newbacker, Indianapolis	2 00
Second, Nellie Wells, Indianapolis.	1 00
Pastelle painting. Mrs. M. Bundy, New Castle.	3 00
Second, Miss M. Trueblood, Indianapolis	2 00
Painted plaque, display, Nellie Berkey, Lafayette.	3 00
Second, Mrs. L. M. Thomas, Terre Haute	2 00
Alabaaster plaque, Mrs. M. Hatfield, Indianapolis	2 00
Second, Kate Railsback, Indianapolis	1 00
Flower painting, in oil, display, Mrs. James Lyons, Indianapolis	3 00
Second, Bertha Lauer, Rochester.	2 00
Flower painting, in oil, specimen, Mrs. James Lyons, Indianapolis	2 00
Second, Kate Railsback, Indianapolis	1 00
Flower painting in water colors, display, Miss Ella Morey, Indianapolis	3 00
Second, Bessie Hendricks, Indianapolis.	2 00
Fruit painting in oil, Kate Railsback, Indianapolis	3 00
Second, Mrs. James Lyons, Indianapolis	2 00
Landscapes in oil, display, Mrs. James Lyons, Indianapolis	5 00
Second, Mrs. L. A. Moore, Terre Haute.	3 00
Landscapes in oil, specimen, Mrs. C. Thompson, St. Louis, Mo	3 00
Second, Mrs. Wm. Seeger, Indianapolis.	2 00
Portraits in oil, specimen, Lillie F. Ball, Indianapolis	5 00
Second, Emma Langston, Lebanon	3 00
Sketch from nature, in oil, Mrs. Kate Railsback, Indianapolis	3 00
Second, Bessie Hendricks, Indianapolis.	2 00
Study from still life, Mrs. Kate Railsback, Indianapolis	3 00
Second, Bessie Hendricks, Indianapolis.	2 00
Ideal head or figure, Mrs. C. L. Thompson, St. Louis, Mo	3 00
Second, Miss M. Hatfield, Indianapolis.	2 00
Animal painting, Emma Langston, Indianapolis	3 00
Second, Miss M. Hatfield, Indianapolis.	2 00

Committee—Miss Charie Graves, Mrs. Lon. M. Neely.

CLASS LIV—Art Work—Professional.

Portraits in oil, display, Mrs. Sue M. Ketcham	\$10 00
Second, Retta Mathews, Arlington	5 00
Portraits in oil, specimen, Mrs. A. E. Ferry, Indianapolis	5 00
Second, Sue M. Ketcham, Indianapolis	3 00
Portraits, water colors, Mrs. A. E. Ferry, Indianapolis	3 00
Portraits, crayon, Retta Mathews, Arlington	3 00
Second, Sabra Cather, Franklin	2 00
Landscapes in oil, display, Sue M. Ketcham, Indianapolis	5 00
Second, Sabra Cather, Franklin	3 00
Landscapes in oil, sketch from nature, Sue M. Ketcham, Indianapolis	3 00
Second, Mrs. A. E. Ferry, Indianapolis	2 00
Landscapes in water colors, display, Sue M. Ketcham, Indianapolis	5 00
Second, Mary Robinson, Indianapolis	3 00
Fruit or vegetable painting in oil, display, Sue M. Ketcham, Indianapolis	8 00
Second, Mrs. A. E. Ferry, Indianapolis	4 00
Fruit or vegetable painting in oil, specimen from nature, Mrs. A. E. Ferry, Indianapolis	3 00
Second, Sue M. Ketcham, Indianapolis	2 00
Flower painting in oil, display, Mary Robinson, Indianapolis	5 00
Second, Sue M. Ketcham, Indianapolis	3 00
Flower painting in oil, specimen from nature, Mary Robinson, Indianapolis	2 00
Second, Sue M. Ketcham, Indianapolis	1 00
Flower painting, water colors, display, Mary Robinson, Indianapolis	5 00
Second, Mrs. L. Sexton, Indianapolis	3 00
Flower painting, water colors, specimen from nature	2 00
Second, Sue M. Ketcham, Indianapolis	1 00
Study from life, in oil, Sue M. Ketcham, Indianapolis	5 00
Second, Sabra Cather, Franklin	3 00
Study from life, water colors, Mary Robinson, Indianapolis	5 00
Drawing from life, Mary Robinson, Indianapolis	3 00
Second, Mrs. A. E. Ferry, Indianapolis	2 00
Pastelle painting, specimen, Sabra Cather, Franklin	3 00
Second, Alice Ross, Indianapolis	2 00
Plaques, display, Mrs. John Julian, Indianapolis	2 00
Second, Sabra Cather, Franklin	1 00
Plaque, alabaster, Mrs. John Julian, Indianapolis	2 00
Second, Alice Ross, Indianapolis	1 00
Crayon drawing, Specimens, Sabra Cather, Franklin	3 00
Second, Mary S. Clark, Bluffton	2 00
Drawings from the antique figure, Retta Matthews, Arlington	2 00
Second, Sue M. Ketcham, Indianapolis	1 00
Drawings from the antique, head, Sabra Cather, Franklin	2 00
Second, Retta Mathews, Arlington	1 00

Study from still life, in oil, Sue M. Ketcham, Indianapolis	\$2 00
Second, Mary Robinson, Indianapolis	1 00
Study from still life, water colors, Mary Robinson, Indianapolis	2 00
Animal painting, Mrs. John Julian, Indianapolis	3 00
Second, Mrs. C. T. Austin, Indianapolis	2 00
Ideal head or figure, Alice Ross, Indianapolis	3 00
Second, Sabra Cather, Franklin,	2 00

Committee—Miss Charie Graves and Mrs. Lon. M. Neely.

CLASS LV—Table Luxuries.

Butter, three pounds, Mrs. H. E. Smock, Philadelphia	\$2 00
Second, Mrs. S. A. Howard, Indianapolis	1 00
Bread, loaf, wheat, yeast, Mrs. A. Hornaday, Indianapolis	2 00
Second Mrs. J. H. Spence, Covington	1 00
Bread, Wheat, salt-rising, Mary E. Hedrick, Indianapolis	2 00
Second, Mrs. V. L. Wilson, Knightstown	1 00
Graham bread, yeast, Miss Kate Hay, Indianapolis	2 00
Second, Mary E. Hedrick, Indianapolis	1 00
Dozen Rolls, Mrs. J. H. Spence, Covington	2 00
Second, Mrs. N. E. Fulton, Edinburg	1 00
Fig cake, Mrs. V. L. Wilson, Knightstown	2 00
Second, Melinda Weghorst, Indianapolis	1 00
Layer cake, orange, Mrs. Wm. Seeger, Indianapolis	2 00
Second, Mrs. F. Baber, Indianapolis	1 00
Layer cake, cocoanut, Miss L. Canan, Indianapolis	2 00
Second, Allie Davidson, Muncie	1 00
Angel food, Mrs. Hale, Indianapolis	2 00
Second, Melinda Weghorst, Indianapolis	1 00
Hickory-nut cake, Allie Davidson, Muncie	2 00
Second, Miss E. Bryan, Indianapolis	1 00
Imperial cake, Mary B. John, Indianapolis	2 00
Second, Miss E. Bryan, Indianapolis	1 00
Fruit cake, Mrs. Sammons, Indianapolis	3 00
Second, Mrs. H. C. Wilson, Indianapolis	2 00
Pork cake, Mrs. S. A. Howard, Indianapolis	2 00
Second, Miss Ada Roney, Indianapolis	1 00
White cake, Mrs. DeSouchet, Indianapolis	2 00
Second, Mrs. F. Hamilton, Indianapolis	1 00
Chocolate cake, layer, Miss L. Canan, Indianapolis	2 00
Second, Mrs. L. Fox, Indianapolis	1 00
Chocolate cake, loaf, Miss L. Fox, Indianapolis	2 00
Second, Mrs. V. L. Wilson, Knightstown	1 00
Crullers, Mrs. J. B. Powers, Indianapolis	1 50
Second, Mrs. M. Flick, Lawrence	1 00

PREMIUM AWARDS.

169

Cream puffs, Melinda Weghorst, Indianapolis	\$2 00
Second, Mrs. J. B. Powers, Indianapolis	1 00
Black pudding, Allie Davidson, Indianapolis	1 50
Second, Mary W. Wilson, Indianapolis	1 00
English plum pudding, Mrs. N. E. Fulton, Edinburg	2 00
Second, Mrs. J. Miller, Edinburg	1 00
Jellies, collection, Allie Davidson, Muncie	3 00
Second, Mrs. V. L. Wilson, Knightstown	2 00
Preserves, collection, not less than one pint each, Mrs. E. Speer, Greensburg.	5 00
Second, Mrs. Darling, North Indianapolis.	3 00
Fruit butters, collection, not less than one pint each, Mrs. E. Speer, Greensburg	3 00
Second, Mrs. F. Hamilton, Greensburg	2 00
Canned fruit, collection, not less than one pint each, Mrs. S. Hall, Indianapolis.	5 00
Second, Miss Lizzie Hall, Indianapolis	3 00
Salad, meat, Mrs. N. E. Fulton, Edinburg	2 00
Second, Mary B. John, Indianapolis	1 00
Salad, fish, Mrs. Hale, Indianapolis	1 50
Second, Mrs. J. Miller, Edinburg	1 00
Salad, vegetable, Mrs. N. E. Fulton, Edinburg	2 00
Second, Mrs. J. B. Powers, Indianapolis	1 00
Saratoga chips, Miss M. G. Lewis, Indianapolis	1 50
Second, Mrs. M. A. Johnson, Indianapolis	1 00
Cooked ham, Mrs. W. A. Ford, Indianapolis	2 00
Second, Mrs. F. Baber, Indianapolis	1 00
Veal loaf, Mrs. A. DeSouchet, Indianapolis	1 50
Second, Allie Davidson, Muncie	1 00
Beef loaf, Mrs. E. A. Parker, Indianapolis	1 50
Second, Miss Lili Roney, Indianapolis	1 00
Sweet pickles, collection, Mrs. S. A. Howard, Indianapolis	2 00
Second, Mrs. E. Speer, Greensburg	1 00
Pickles, mixed, Mrs. Sammons, Indianapolis	2 00
Second, Mrs. S. A. Howard, Indianapolis	1 00
Pickles, cucumber, Mrs. Noe, Indianapolis	2 00
Second, Mrs. E. A. Howard, Indianapolis.	1 00
Tomato catsup, not less than one pint, Mrs. A. De Souchet, Indianapolis.	1 50
Second, Mrs. E. A. Parker, Indianapolis	1 00
Cucumber catsup, Allie Davidson, Muncie	1 50
Chili sauce, Mrs. M. Flick, Lawrence	1 50
Second, Allie Davidson, Muncie	1 00
Boston baked beans, Allie Davidson, Muncie	1 50
Second, Mrs. J. B. Powers, Indianapolis	1 00
Baked apples, Miss Lillie Roney, Indianapolis	1 50
Second, Mrs. E. A. Parker, Indianapolis	1 00

Cranberry sauce, not less than one quart, Mrs. J. B. Powers, Indianapolis	1 50
Second, Mrs. W. A. Ford, Indianapolis	\$1 00
Gelatine dessert, in any form, Lizzie Rohan, Indianapolis	1 50
Collection French candies, home made, Miss E. Bryan, Indianapolis	1 50
Second, Mary B. John, Indianapolis	1 00
Collection taffies, home made, Mrs. J. B. Powers, Indianapolis	1 50
Second, Mrs. Perry App, Dayton, Ohio	1 00

Committee—Mrs. F. A. Shultz, Attica; Miss Jennie Mitchell, Princeton.

CLASS LVI—Public Schools and Institutions.

Crayon drawings display, High School, Indianapolis.	\$2 00
Modeling in clay, Free Kindergarten, Indianapolis	1 50
Kindergarten work, Mrs. E. A. Blaker, Indianapolis	1 00

Committee—Mrs. Charlie Graves; Miss Lon. McNeely.

CLASS LVII—Children's Department.

Loaf white bread, yeast, Nellie Price, Indianapolis	\$1 50
Second, Ella Brison, Indianapolis	1 00
Third, Della App, Dayton, Ohio	50
Loaf white bread, salt rising, Ella Brison, Indianapolis	1 50
Second, Minnie Miller, Edinburg	1 00
Orange or lemon cake, Della App, Dayton	1 50
Second, Alice Randall, Indianapolis	1 00
Cocoanut cake, Della App, Dayton, Ohio	1 50
Second, Ella Brison, Indianapolis	1 00
Third, Alice Randall, Indianapolis	50
Chocolate cake, Ella Brison, Indianapolis.	1 50
Second, Alice Randall, Indianapolis	1 00
Third, Nellie Price, Indianapolis	50
Sponge cake, Ella Brison, Indianapolis.	1 50
Second, Minnie Miller, Edinburg	1 00
Third, Vinna Brady, Lawrence	50
Angel food, Lilian Hall, Indianapolis	1 50
Crullers, Della App, Dayton, Ohio	1 50
Second, Ella Brison, Indianapolis	1 00
Jellies, collection, Ethel A. McLeod, Sandusky, Ohio.	1 50
Second, Minnie Miller, Edinburg	1 00
Third, Vinnie Brady, Lawrence	50
Preserves, collection, not less than one pint each, Birdie Brister, Indianapolis	2 00
Collection French candies, home made, Della App, Dayton, Ohio	1 50
Collection taffies, home made. Ella Brison, Indianapolis	1 50
Second, Della App, Dayton, Ohio	1 00

Patch work, crazy, Ethel A. McLeod, Sandusky, Ohio	\$1 50
Second, Maude Neely, Muncie	1 00
Garment, hand-made, Daisy Duncan, Covington.	1 50
Second, Laura Bragg, Traders' Point.	1 00
Buttonholes, display, different materials, Ella Brison, Indianapolis	1 00
Embroidery, cotton, Daisy Duncan, Covington	1 50
Second, Laura Bragg, Traders' Point.	1 00
Embroidery, arasine, specimen, Daisy Duncan, Covington	1 50
Second, Bertha Tarkleson, Anderson	1 00
Banner, Daisy Duncan, Covington	1 50
Second, Bertha Tarkleson, Anderson	1 00
Third, Laura Caulton, Indianapolis	50
Dressed doll and wardrobe, Gretchen Frey, Indianapolis	1 50
Second, Ethel A. McLeod, Sandusky, Ohio	1 00
Third, Esther Fay Shover, Indianapolis	50
Crochet work, display, Bertha Tarkleson, Anderson	1 50
Second, Bessie Judson, Paris, Ill	1 00
Third, Temple Tompkins, Indianapolis	50
Crochet work, specimen, Nellie McClellan, Indianapolis	1 00
Second, Bessie Judson, Paris, Ill.	50
Crochet skirt, Bessie Judson, Paris, Ill	1 50
Pair crochet mittens, Bertha Tarkleson, Anderson	1 00
Tidy, Bertha Tarkleson, Anderson	1 50
Second, Ethel A. McLeod, Sandusky, Ohio	1 00
Third, Bertha Tarkleson, Anderson	50
Pin cushion, Bessie Judson, Paris, Ill	1 50
Second, Ethel A. McLeod, Sandusky, Ohio	1 00
Third, Bertha Tarkleson, Anderson	50
Toilet set, Ethel A. McLeod, Sandusky, O	1 50
Second, Bertha Tarkleson, Anderson	1 00
Third, Bessie Judson, Paris, Ill	50
Fancy Sachets, Gertie Williams, Richmond.	1 50
Second, Bertha Tarkleson, Anderson	1 00
Scrap book, Gertie Williams, Richmond	1 50
Second, Vinna Brady, Lawrence	1 00
Third, Ethel McLeod, Sandusky, O	50
Painting on silk or satin, Gertie Williams, Richmond	1 50
Second, Bertha Tarkleson, Anderson	1 00
Third, Ella Brison, Indianapolis.	50
Painting on wood, Bertha Tarkleson, Anderson	1 50
Second, George Mooney, Columbus	1 00
Third, Bertha Tarkleson, Anderson	50
Painted plaques, Bertha Tarkleson, Anderson	1 50
Second, George Mooney, Columbus.	1 00
Third, Daisy Duncan, Covington.	50

Painting on bolting cloth, Gertie Williams, Richmond	\$1 50
Second, Bertha Tarkleson, Anderson	1 00
Third, Clara Lynn, Indianapolis	50
Flower Painting, Gertie Williams, Richmond	1 50
Second, George Mooney, Columbus	1 00
Third, Clara Lynn, Indianapolis	50
Hammered Brass, Bertha Tarkleson, Indianapolis	1 50
Drawing, original, Chas. Blodget, Indianapolis	1 50
Second, Ida Roney, Indianapolis	1 00
Third, Chas. Blodget, Indianapolis	50
Drawing, copy, Chas. Blodget, Indianapolis	1 50
Second, Chas. Blodget, Indianapolis	1 00
Woods collection, named, Ethel A. McLeod, Indianapolis	1 50
Shells collection, named, Maxwell Allison, Indianapolis	1 50
Second, Gerry M. Sanborn, Indianapolis	1 00
Minerals collection, named, Gerry M. Sanborn, Indianapolis	3 00
Second, Ray Scott, Indianapolis	2 00
Collection of curiosities, Gerry M. Sanborn, Indianapolis	2 00
Second, Harvey S. Humphrey, Indianapolis	1 50
Third, Ray Scott, Indianapolis	1 00
Collection of old coins, Gerry M. Sanborn, Indianapolis	2 00
Second, Maxwell Allison, Indianapolis	1 00

Committee—Mrs. F. A. Shultz and Miss Jennie Mitchell.

CLASSIFIED EXHIBITS.

[*Where State is not given Indiana is implied.*]

STEAM ENGINES.

Gaar, Scott & Co., Richmond, plain engine, traction engine.
J. I. Case M. Co., Racine, Wis., plain farm engine, traction engine.
A. M. Stevens & Son, Auburn, N. Y., plain engine, two traction engines.
Springfield Engine and Thresher Co., Springfield, Ohio, four engines and two separators.
Wm. Deering & Co., Chicago, Ill., stationary engine.
Roberts, Throp & Co., Three Rivers, Mich., one engine and separator.
James M. Elder, Indianapolis, plain engine.
Eagle Machine Works, Indianapolis, engines, etc.
Harry Schaal, Indianapolis, engine.
Daniel Wilkinson, Peru, farm engine.
Aultman, Taylor & Co., Mansfield, Ohio, two traction engines and two separators.
Russell & Co., Indianapolis, two traction engines.
Advance Thresher Co., Battle Creek, Mich., two traction engines.
The Geiser Mfg. Co., Waynesboro, Pa., traction engine.
Whitley, Fanler & Kelly, Springfield, Ohio, portable engine.
L. H. Waters, Stillwater, Minn., engine and separator.

STEAM PUMPS AND ALL APPARATUS OPERATED BY STEAM.

R. R. Rouse, Indianapolis, pumps and engines.
Stumpf & Thiele, Indianapolis, steam washer.

SAW MILLS.

Rockwood, Newcomb & Co., Indianapolis, saw mill, mill machinery and wind mill.
Eagle Machine Works, Indianapolis, saw mill.
Burdshall Co., Auburn, New York, saw mill.

TILE MILLS.

Fletcher & Thomas, Indianapolis, tile machinery.
Anderson Foundry and Machine Works, Anderson, tile machine.
The Wallace Mfg. Co., Frankfort, tile machine.
Clermont Tile Works, drain tile.

BRICK MACHINES.

Fletcher & Thomas, Indianapolis, brick machine.
Anderson Foundry and Machine Works, Anderson, brick machine.

FORCE PUMPS OF ALL KINDS.

E. K. Hays, Galva, Ill., iron force pumps and shoveling boards.
 Mast, Foos & Co., Springfield, Ohio, force pumps and hose reels.
 G. Krauss & Co., Indianapolis, display pumps.
 Standard Wind Engine Co., Indianapolis, three pumps.
 Howe Pump and Engine Co., Indianapolis, force pumps and wind mill.
 L. D. Railsback, Indianapolis, force pump.
 R. R. Rouse, Indianapolis, wind mills and pumps.
 F. E. Myers & Bro., Ashland, Ohio, pumps.

WOOD-WORKING MACHINERY, EVAPORATORS, ETC.

John B. Wirt, Indianapolis, feather renovator.
 A Showalter, Columbus, Ohio, wood-working machinery, scroll saw.
 A. W. Carter, Cartersburg, folding sawing machine.

PRINTING AND BOOK-BINDING MACHINERY.

Haines Portable Copying Press Co., copying press.

LAUNDRY AND DAIRY MACHINES AND IMPLEMENTS.

John Dilligan, Madison, O K churn.
 Wethers & Case, Indianapolis, washers.
 J. T. Allison, Indianapolis, churn and washing machine.
 W. I. Slifer & Co., Mulberry, washing machine.
 E. A. Russ, Indianapolis, Pyle's Pearline, washing compound.
 Flint Cabinet Creamery Co., Flint, Mich., cabinet creameries, barrel churns.
 Indianapolis Manufacturing Co., churn and milk shake machine.
 Buckeye Churn Co., Carey, O., churns.
 John H. Thornburg, Barton, Ia., churns.
 Tiffin Union Churn Co., Tiffin, Ohio, churns.

Franklin Clark, Brownsburg, washing machine.

W. M. Porter, Indianapolis, washing machine.

J. J. Wenner, Indianapolis, rocking churn.

OTHER DOMESTIC MACHINES AND IMPLEMENTS.

E. D. Preston, St. Louis, Mo., preserve slicer.

Pagett & Co., Oxford, ironing table.

Smith Mfg. Co., Danville, flour sifters, strainers, etc.

W. M. Matthews, Madison, coffee-pot and urn.

A. M. Makepeace, Indianapolis, vegetable slicer.

HOUSE FURNISHING GOODS.

Adams Mfg. Co., Indianapolis, rugs, etc.

C. M. Howard, Indianapolis, pillow-shamholder.

STOVES, RANGES, FURNACES AND VENTILATORS.

Kruse & Dewenter, Indianapolis, furnaces, stoves and ventilators.

George E. Feeney, Indianapolis, stoves and ranges.

Indianapolis Stove Co., display of stoves.

James B. Wilson, Indianapolis, stove.

J. A. Johnson, Indianapolis, stoves and ranges.

Bussey & McLeod, Troy, N. Y., stoves and ranges.

Stumph & Thiele, Indianapolis, furnaces.

W. H. Bennett & Son, Indianapolis, stoves.

J. H. Berber, Indianapolis, ventilator and window stop.

IRON, STEEL, SCALES, SAWS.

Thompson & Co., Muncie, scale.

Bloomington Roofing Co., Bloomington, iron and steel roofing, siding, ceiling, etc.

W. C. Downey & Co., Springfield, Ohio, bell rack.

Thompson Scale Co., Muncie, scales.

GRATES, VICES, DRILLS.

Omega Stove and Grate Co., Cleveland, Ohio, fire place grate.
 M. S. Huey & Son, Indianapolis, mantles, sill and grates.
 James Wethers, Indianapolis, vice and drill.

PLOW—ALL KINDS.

Gale Mfg. Co., Albion, Mich., plows, all kinds.
 Brown-Manly Plow Co., Malta, Ohio, general display of plows.
 Dayton Plow Works, Dayton, Ohio, display of plows of all kinds.
 Bucyrus Steel Plow Works, Bucyrus, Ohio, display of plows of all kinds.
 Davis, Luthy & Co., Peoria, Ill., plows, all kinds.
 Moline Plow Works, Moline, Ill., display of plows.
 The Long & Alstatter Co., Hamilton, Ohio, plows of all kinds.
 Gibbs & Ball Plow Co., Canton, Ohio, breaking plows.
 Geo. W. Moore, Indianapolis, two plows.
 Wier Plow Co., Monmouth, Ill., display of plows.
 J. I. Chase Plow Works, Racine, Wis., display of plows.
 Bucher & Gibb Plow Co., Canton, Ohio, display of plows.
 Kilbourne & Jacobs, Columbus, Ohio, plow display.
 Davis, Luthy & Co., Peoria, Ill., sulky plow.
 Deere & Co., Moline, Ill., plows, cultivators, etc.
 Bradley, Holton & Co., Indianapolis, plows, all kinds.
 Brown-Manly Plow Co., Malta, Ohio, plows and cultivators.
 Dayton Plow Co., Dayton, Ohio, display of plows.

CULTIVATORS AND PULVERIZERS.

Geo. W. Brown & Co., Galesburg, Ill., two-horse cultivators.
 Bradley, Holton & Co., Indianapolis, display of cultivators.
 Brown-Manly Plow Co., Malta, Ohio, general display of cultivators.

Davis, Luthy & Co., Peoria, Ill., cultivators, all kinds.
 Moline Plow Co., Moline, Ill., cultivators.
 Beedle & Kelly Co., Troy, Ohio, cultivators.
 The Superior Drill Co., Indianapolis, cultivators.
 The Long & Alstatter Co., Hamilton, Ohio, cultivators.
 D. C. & H. C. Reed & Co., Kalamazoo, Mich., cultivators.
 Kimberlin Mfg. Co., Indianapolis, cultivator attachments, doubletrees, etc.
 H. P. Deutscher, Hamilton, Ohio, cultivators, etc.
 Albion Mfg. Co., Albion, Mich., spring tooth cultivators with seeding attachments.
 O. S. Neisler, Indianapolis, cultivators, and attachments.
 Steel Pully and Machine Works, Indianapolis, cultivators and attachments.
 Weir Plow Co., Monmouth, Ill., display of cultivators.
 J. I. Case Co., Racine, Wis., display of cultivators.
 Davis, Luthy & Co., Peoria, Ill., walking, tongue and tongueless cultivators.
 Jonathan Chalfant, Blountsville, cultivator.
 J. B. Okey, Indianapolis, soil pulverizer and cultivator.
 S. Allen & Co., Philadelphia, Pa., cultivator and drill.
 P. P. Mast & Co., Springfield, Ohio, pulverizer, walking spring-shovel riding six-shovel cultivator.
 John Tarlton, Indianapolis, cultivators.
 Steel Pulley and Machine Works, Indianapolis, cultivators and attachments.

HARROWS AND CORN PLANTERS.

Geo. W. Brown & Co., Galesburg, Ill., two-horse corn planter.
 Bradley, Holton & Co., Indianapolis, harrows.
 Hearst, Dennis & Co., Peoria, Ill., two-horse corn planter.
 The Higganum Manufacturing Co., Higganum, Conn., harrows, all kinds, and knife grinders.
 Davis, Luthy & Co., Peoria, Ill., five harrows.

Moline Plow Co., Moline, Ill., two harrows.
 The Oliver Rake Co., Dayton, Ohio, harrows.
 E. K. Hays, Galva, Ill., corn planters.
 The Beedle & Kelly Co., Troy, Ohio, two corn planters.
 D. C. & H. C. Reed & Co., Kalamazoo, Mich., spring-tooth harrow.
 Kimberlin Manufacturing Co., Indianapolis, three iron duke harrows.
 Whipple Harrow Co., Eaton Rapids, Mich., spring-tooth harrows.
 W. C. Downey & Co., Springfield, Ohio, harrows.
 Wayne Agricultural Works, Richmond, corn planters.
 Leon O. Bailey, Indianapolis, double corn planter.
 Weir Plow Co., Monmouth, Ill., display of harrows.
 Goshen Harrow Co., Goshen, harrow and seeder combined.
 H. P. Deutscher, Hamilton, Ohio, three corn planters, corn drill attachment.
 J. A. Kern, Quaker Hill, harrow.
 R. L. Lukens, Excelsior harrow.
 Challenge Corn Planter Co., Grand Haven, Mich., display of planters.
 The Lawrence Chapin Co., Kalamazoo, Mich., harrows.
 T. C. Cook, Rushville, Ind., rotary harrow.

DRILLS, HOES, RAKES AND SHOVELS.

Bradley, Holton & Co., Indianapolis, rakes, all kinds.
 Havana Press Drill Co., Havana, Ill., one wheat drill.
 Hoosier Drill Co., Richmond, Ind., display of drills.
 Star Drill Co., Rushville, drill.
 Eagle Machine Co., Lancaster, O., one wheat drill.
 James Campbell, Harrison, Ohio, one-horse corn drill and fertilizer drill.
 King Drill Co., Logansport, three one-horse wheat drills.
 Hearst, Dennis & Co., Peoria, Ill., two-horse corn drill.
 Bickford & Huffman, Dayton, Ohio, Farmers' Favorite grain drill.
 Moline Plow Co., Moline, Ill., one-wheeled rake.
 The Ohio Rake Co., Dayton, Ohio, rakes.

The Beedle & Kelly Co., Troy, Ohio, drills and lister hay rakes.
 The Superior Drill Co., Indianapolis, grain drills.
 The Long & Alstatter Co., Hamilton, Ohio, rakes.
 Albion Mfg. Co., Albion, Mich., sulky hay rakes.
 Wayne Agricultural Works, Richmond, grain and corn drills.
 P. P. Mast & Co., Springfield, Ohio, two one-horse wheat drills, one fertilizer grain drill, one-horse hay rake.

CHECK ROWERS, MARKERS, SEEDERS.

Geo. W. Brown & Co., Galesburg, Ill., check rower.
 E. K. Hayes, Galva, Ill., check rowers.
 The Beedle & Kelly Co., Troy, Ohio, check rower.
 D. C. and H. C. Reed & Co., Kalamazoo, Mich., broadcast seeders.
 H. P. Deutscher, Hamilton, Ohio, check rower.
 Deere & Mansur Co., Moline, Ill., corn planters, check rowers, etc.

HARVESTING IMPLEMENTS.

Peerless Reaper Co., Indianapolis, display of reapers, mowers, etc.
 The Johnston Harvester Co., Chicago, Ill., twine binders, reapers and mowers.
 Buckeye Harvesting Machine Co., Indianapolis, harvesting machinery.
 Esterly Harvesting Machine Co., Indianapolis, harvesting machinery.
 J. F. Seiberling & Co., Akron, Ohio, harvesting machinery.
 Milwaukee Harvester Co., Milwaukee, Wis., reapers and mowers.
 S. D. Madden, Port Huron, Mich., harvesting machinery.
 H. J. Prier, Indianapolis, harvesting machinery.
 The H. C. Staver Implement Co., Chicago, Ill., display of implements.
 Mast, Foos & Co., Springfield, Ohio, lawn mowers.
 D. M. Osborne & Co., Indianapolis, harvesting machinery.
 Wm. Deering & Co., Chicago, Ill., harvesting machinery.
 McCormick Mfg. Co., Chicago, Ill., harvesting machinery.

D. S. Morgan & Co., Chicago, Ill., reapers, mowers and binders.
 Geo. Prier, Indianapolis, reapers, etc.
 Whitley, Fauler & Kelly, Springfield, Ohio, mowers and binders.
 Winchester & Patridge Mfg. Co., White-water, Wis., mower.
 Rogers Fence Co., Springfield, Ohio, lawn mower and harness.
 Sweeney & Gormey, Roachdale, endless chain, reaping and mowing, and reaping sickle, Edwards' center draft mower.
 John P. Many Mower Co., Rockford, Ill., mower.
 Birdsall Mfg. Co., South Bend, one clover huller.

HORSE HAY RAKES--SULKY.

T. E. Myers, Ashland, Ohio, hay rakes.
 John Dodds, Dayton, Ohio, three-horse hay rakes.
 Sterling Mfg. Co., Sterling, Ill., one-horse hay rake.
 Thomas Mfg. Co., Springfield, Ohio, rakes, tedders.

TEDDERS.

The Ohio Rake Co., Dayton, O.
 Sterling Mfg. Co., Sterling, Ill.

STACKERS AND HAY ELEVATORS.

Gaar, Scott & Co., Richmond, mounted stacker.
 Springfield Engine and Thresher Co., Springfield, O., two springing stackers.
 Reeves & Co., Columbus, two straw stackers.
 Eagle Machine Works, Indianapolis, Eagle Machine Works stacker.

FANNING MILLS.

Oates & Barclay, Carlos City, Ind., wheat screen.

CORN SHELLERS.

Eagle Machine Co., Lancaster, O., two corn shellers.
 McLaughlin, Sheldon & Co., Owatonna, Minn., corn sheller.

A. M. Stevens & Son, Auburn, N. Y., two corn mills.
 The Ohio Rake Co., Dayton, Ohio, corn sheller.
 Appleton Mfg. Co., Appleton, Wis., two-hole corn sheller.

THRESHERS.

Gaar, Scott & Co., Richmond, threshing machine.
 J. I. Case Threshing Machine Co., Racine, Wis., threshing machine.
 Russell & Co., Indianapolis, two threshing machines.
 A. M. Stevens & Son, Auburn, N. Y., two threshing machines.
 Advance Thresher Co., Battle Creek, two threshing machines.
 Eagle Machine Works, Indianapolis, threshing machine.
 James Buchanan, Indianapolis, two separators.
 Robinson & Co., Richmond, one threshing machine.
 Minnesota Thresher Mfg. Co., threshers; agent, J. B. Parker, Indianapolis.

FEED MILLS, CRUSHERS, STRAW CUTTERS AND STEAMERS.

McLaughlin, Sheldon & Co., Owatonna, feed mill and horse power.
 Waldron & Sprout, Muncie, Pa., feed mill and crusher combined.
 E. A. Porter & Bros., Bowling Green, Ky., corn crusher and horse power.
 Stover Manufacturing Co., Freeport, Ill., Ideal feed mills, corn and cob crusher.
 J. S. Gallup, Kendallville, feed mill.
 N. P. Bowsher, South Bend, feed mills.
 Bradley, Holton & Co., Indianapolis, fin cutter, knee cutter, etc.
 Eagle Machine Co., Lancaster, Ohio, three cutting boxes.
 McLaughlin, Sheldon & Co., Owatonna, Minn., cutting box.
 The Long and Alstatter Co., Hamilton, Ohio, cutting boxes.
 Amos Plow Co., Boston, Mass., feed cutter.

Stover Deming Mfg. Co., Salem, Ohio, feed mills.
 Belle City Manufacturing Co., Indianapolis, feed cutters.
 Hocking Valley Manufacturing Co., feed cutters and shellers.
 J. & G. Boswell, Indianapolis, corn cutter.

HAY PRESSES.

Famous Manufacturing Co., Indianapolis, Champion hay press.
 Geo. Ertel & Co., Quincy, Ill., hay press.
 Johnson Press Manufacturing Co., hay presses.
 E. Albert & Son, Indianapolis, hay press.
 D. E. Daly, Ottawa, Ill., hay tools.

FENCES AND FENCE MACHINES.

John Dickinson, Vevay, Ind., combination fence.
 Henry Kelch, Versailles, Ohio, fence loom.
 Kesling Bros., Onward, wire and picket fence machine.
 Kiles Bros., Indianapolis, iron fence and wire fencing.
 Empire Fence Co., Richmond, portable fence loom.
 A. D. Reeves & Bro., Richmond, portable fence loom.
 M. C. Henley, Richmond, Monarch fence machine.
 Maast, Foos & Co., Springfield, O., iron fencing.
 John J. Gartshore, Toronto, Ontario, wire fence and stretcher.
 Rogers Fence Co., Springfield, O., fence.
 Excelsior Fence Machine Co., Peru, Excelsior fence machine.
 F. M. Love, Shelbyville, fence machine.
 Vandegrift & Mable, Shelbyville, portable fence machine.
 J. B. Cleveland, Indianapolis, iron fence.
 Dr. A. Eckert, Trenton, O., gate closer, and door fastener.
 Kelley & Hollenbeck, Kingston, Hoosier wire fence.
 W. V. Russell, New Castle, rail fence.
 Geo. W. Williams, Economy, Ind., fence machine.
 Elliott, Reed & Co., Richmond, fence machine.
 Shaw & Co., Westfield, yard gate.

WIND ENGINES.

Maast, Foos & Co., Springfield, O., wind engines.
 Standard Wind Engine Co., Indianapolis, Standard wind engine.
 B. S. Williams & Co., Kalamazoo, Mich., Marvel wind engine.
 Lima Mfg. Co., Lima, Ohio, wind mill.

AUTOMATIC GATES.

M. A. Shepard, Lebanon, Ill., pendulum gate.
 T. R. Cook, Indianapolis, automatic gate.
 J. D. Fox, Cyclone, automatic gate.
 M. A. Streeter, Lafayette, automatic gate.
 D. L. L. Yost, Indianapolis, Baanett suspension farm yard gate.
 Star Gate Co., Abingdon, Ill., Star automatic gate.

CORNSTALK CUTTERS.

Moline Plow Co., Moline, Ill., cornstalk cutter.
 Rockwood, Newcomb & Co., corn harvester.
 Ewald Over, Indianapolis, corn cutter.

CIDER MILLS.

Superior Drill Co., Indianapolis, cider mill.
 P. P. Mast & Co., Springfield, Ohio, two cider mills.

FARM-WAGONS AND ATTACHMENTS.

Austin, Tomlinson & Webster Mfg. Co., Jackson, Mich., four farm wagons.
 T. R. Cook, Indianapolis, Lindsley's wagon jack.
 Tennessee Wagon Co., Nashville, Tenn., six wagons.
 Davis, Louthy & Co., Peoria, Ill., two wagons and harness.
 Weber Wagon Co., Chicago, Ill., two farm wagons.

Samuel Heffley, Rochester, one two-horse wagon.
 J. H. Waldron, Urbana, Ohio, automatic wagon brake.
 Weir Plow Co., Monmouth, Ill., wagon body lifter.
 Moline Wagon Co., Moline, Ill., six farm wagons.
 Adam Helfrich, Indianapolis, dump wagon.
 Whitney Wagon Co., Syracuse, N. Y., wagons.

ROAD-MAKING MACHINES.

American Road Machine Co., Kennet Square, Pa., five road machines and excavator, three styles of dump scoop.
 Peter Raab, Indianapolis, road machine.
 Weir Plow Co., Monmouth, Ill., display of scrapers.
 Ewald Over, Indianapolis, road machine.
 American Steel Scraper Co., Sidney, O., scrapers.

MISCELLANEOUS EXHIBITS.

Springfield Engine and Thresher Co., Springfield, Ohio, water tanks and other fixtures.
 Huntington's Seed Store, Indianapolis, seeds, tools, etc.
 Wm. Heap, Muskegon, Mich., earth closets, piano stools, cinder sifter, etc.
 Lightning Conductor Co., Indianapolis, lightning conductors, etc.
 Bishop & Huntington, Indianapolis, bottled pickles, etc.
 Gaar, Scott & Co., Richmond, clover huller.
 James M. Elder, Indianapolis, clover huller and separator.
 A. W. Morgan & Son, Indianapolis, well auger.
 Noel Bros., Indianapolis, rock salt and poultry supplies.
 Jeffers Paint Co., Indianapolis, paints, etc.
 Brooks Oil Co., Indianapolis, machine oil.
 Union Mfg. Co., Indianapolis, novelties.
 Mayer Bros., Cincinnati, Ohio, bottled goods.

Bryant's Business College, Indianapolis, fancy penmanship.
 J. A. Everett & Co., Indianapolis, seeds.
 J. I. Case Plow Works, Racine, Wis., lister.
 L. D. Railsback, Indianapolis, electrical druggist alarm.
 J. L. Mattingley, Corydon, Champion evaporator for sorghum and maple.
 Chas. F. Adams, Indianapolis, exhibit of household furnishing goods, etc.
 The Louis Burgheim Co., Indianapolis, flat and hollow silverware.
 The Waterbury Watch Co., N. Y., Waterbury watches.
 Kaiser & Pfleger, Indianapolis, eight New Home sewing machines.
 W. M. Gentle, Southport, two pictures.
 Kate Kennedy, Crawfordsville, two pictures.
 John Black, Indianapolis, art stained glass.
 Steel Pulley Machine Works, Indianapolis, display pulleys.
 Standard Business College, Indianapolis, display of penmanship.
 W. H. Doll, Indianapolis, portrait weaving in silk.
 E. A. Eickhoff, Indianapolis, display of fruit trees.
 Hartman Mfg. Co., Beaver Falls, Pa., wire goods.
 Wethers & Case, Indianapolis, hoisting jack.
 Supt. Indianapolis Schools, Indianapolis, modeling in clay by children of public schools, and drawing by high school pupils.
 Adams Mfg. Co., exhibit house furnishing goods.
 W. F. Staples, Indianapolis, specimens of photography.
 L. W. George, Indianapolis, minerals and curiosities.
 E. L. Shanneberger, Indianapolis, collection of butterflies.
 Miss Dell Morgan, pictures, art work, etc.
 St. John's Academy, pictures, etc.
 Wright & Parker, Indianapolis, house furnishing goods.
 C. C. Koerner, Indianapolis, pen drawings, etc.
 Perry Hay, Irvington, collection of minerals.
 Metropolitan Mfg. Co., Indianapolis, house furnishing goods.

Domestic Sewing Machine Co., Domestic sewing machines and display of art needlework.
 Mrs. Amos Oberly, Rice's international graded science of music.
 A. Lewis, Indianapolis, optical goods.
 Heriden Medicine Co., Indianapolis, medicines.
 John Becker, Indianapolis, chemical engine, gas burner, etc.
 M. A. Ayers, Cleveland, Ohio, Standard sewing machines.
 J. L. Burton, Indianapolis, Bell truss.
 Carson & Munro, Indianapolis, Tilt trusses.
 H. T. Conde, Indianapolis, nine caligraphs.
 James B. Wilson, Indianapolis, one organ.
 Bryant & Dierdorf, Indianapolis, pianos and organs.
 H. F. Solliday & Co., Indianapolis, milk shake.
 Dr. A. P. Herron, Indianapolis, dental appliances.
 Geo. C. Pearson, Indianapolis, musical instruments.
 D. H. Baldwin & Co., Indianapolis, musical instruments.
 White Sewing Machine, Indianapolis, display of sewing machine work.
 Flanner & Buchanan, Indianapolis, funeral designs, plat of Crown Hill Cemetery.
 Randleman & Sons, Carlisle, Iowa, in-lying brood sow pen.
 J. R. Lynch, Lee, calf weaner and animal poke.
 J. G. Wolf, Morristown, gate, office and yard.
 A. P. Garrison, Indianapolis, photograph enlarging.
 Chas. Mayer & Co., Indianapolis, display of fancy goods.
 T. J. Trusler & Son, Indianapolis, toilet display.
 Indianapolis Business University, book-keeping, etc.
 The Art Store, Indianapolis, display of etchings, photographs, etc.
 Hibbard Rheumatic Syrup, Indianapolis, medicines.
 Fuschia Bud Co., Indianapolis, medicines.
 Gilt Co., Indianapolis, medicines.
 Ford & Co., Indianapolis, display paper boxes.

CARRIAGES AND BUGGIES—ALL KINDS.

Connersville Buggy Co., Connersville, buggies and buckboards.
 Spiral Spring Carriage Co., Cincinnati, Ohio, carriages.
 Bradley, Holton & Co., Indianapolis, carriages, buggies, surreys, phaetons, etc.
 V. M. Backus & Co., Indianapolis, carriages, phaetons, buggies.
 Columbus Buggy Co., Columbus, Ohio, buggies, surreys, phaetons.
 Kalamazoo Wagon Co., Kalamazoo, Mich., two buggies, three cutters, two carts.
 Davis, Luthy & Co., Peoria, Ill., two-wheel carts, sleigh, Davis road cart.
 Abbott Buggy Co., Chicago, Ill., one buggy, two steel gear buggies, one cart.
 Bernd Bros., Indianapolis, carriages and spring wagons.
 Irwin Robbins & Co., Indianapolis, carriages.
 Troy Buggy Works, Troy, O., four carriages.
 The Whitney Wagon Works, Syracuse, N. Y., one N. Y. surrey, one phaeton, two buggies, one cutter.
 The C. M. Black Mfg. Co., Indianapolis, carriages, buggies, etc.
 G. W. Lutz & Co., Indianapolis, carriages, buggies, phaetons, etc.
 Kauffman Buggy Co., Miamisburg, O., carriages and buggies.
 L. & M. Woodhull, Dayton, O., six buggies.
 Michigan Buggy Co., Kalamazoo, Mich., buggies.
 Stultz & Walker, Goshen, carriages.
 Fostoria Buggy Co., Fostoria, Ohio, buggies and carriages.
 L. Bund & Son, St. Mary's, O., carriages.
 Wayne Works, Richmond, display of road carts.
 The Flint Road Cart Co., Flint, Mich., two road carts.
 Stultz & Walker, Goshen, carriages.
 J. H. Bohmie, Indianapolis, buggy and surrey.
 Charles E. Kregelo, Indianapolis, funeral cars, coffins, etc.
 Oxford Buggy Co., Oxford, O., buggies and buggy seats.

BICYCLES AND TRICYCLES.

James B. Wilson, Indianapolis, American bicycle.
Indiana Bicycle Co., Indianapolis, bicycles.

FURNITURE AND UPHOLSTERY.

Spiegel & Thoms, Indianapolis, display of furniture.
W. L. Elder, Indianapolis, display of furniture.

CARPETS, RUGS, ETC.

Albert Gall, Indianapolis, draperies, carpets, rugs and wall paper.
Eastman, Schleicher & Lee, carpets and wall paper.

CLOTHING, ETC.

When Clothing Store, Indianapolis, display of clothing.
Model Clothing Co., Indianapolis, display of clothing.
Kahn & Co., Indianapolis, display of clothing.
H. S. Tucker, Indianapolis, display of gloves.

NEWSPAPER STANDS.

Indianapolis Journal Co., Indianapolis.
Indianapolis Sentinel Co., Indianapolis.
Indianapolis News, Indianapolis.
Indiana Farmer, Indianapolis.
Ohio Farmer, Cleveland, Ohio.
Prairie Farmer, Chicago, Ill.
National Live Stock Journal, Chicago, Ill.

FARMERS' INSTITUTES.

The history of Farmers' Institutes in Indiana has been varied. The first attempts to organize institutes in the State did not meet with favor, or, at least, did not obtain the results that was anticipated by the originators, i. e., bring out the farmers to hear and engage in the discussion of subjects pertaining to agriculture and stock raising. Several Institutes were held in different parts of the State during 1887, which, from reports submitted to the Board of Agriculture, were failures, as regards attendance throughout. During the year (1888) just closed, however, success has crowned the efforts of workers in this field, and notably different results have obtained in a very large number of places where institutes have been held. In many instances the interest has been maintained throughout the two days set apart for holding these meetings, and large crowds have come together in response to the call to hear addresses by learned gentlemen selected to conduct these institutes. The discussion of subjects presented appear to have been the most profitable result of the meetings, as in many instances it developed that the practical farmer was "loaded" with ideas directly in opposition to those submitted in papers presented by eminent scientific gentlemen, and, of course, controversies ensued, which, although heated at times, aroused enthusiasm in the subject, and in the end, resulted beneficially to both farmer and instructor.

Among the Institutes held, programmes were received at the office of the Secretary of the Board of Agriculture from Rockville, Parke County; Peru, Miami County; Princeton, Gibson County; Laporte, Laporte County, and Plainfield, Hendricks County, while the proceedings of the meetings held at Franklin, Johnson County, and Anderson, Madison County, were received, from which the following is taken:

FRANKLIN COUNTY INSTITUTE.

The first Institute in Johnson County was held under the auspices of Sugar Creek Grange, of which John Tilson, Esq., is Master, and the State Board of Agriculture, of which Board S. W. Dungan is the member from this district.

The Institute was called to order by S. W. Dungan, who was the presiding officer through the sessions. R. A. Brown, of the Franklin Republican, was elected secretary. The invocation was by Dr. R. T. Brown, of Indianapolis. Mayor Overstreet gave a hearty address of welcome to the visitors and farmers. He traced the early history of the county and described the obstacles which the pioneers had to overcome in order to leave such a heritage of rich domain. He spoke of our political, commercial, industrial, educational and agricultural advantages. The farmer is always welcome to Franklin.

Dr. R. T. Brown's response was a thoughtful and cordial one. Man was created to till the soil. This was the first Divine appointment and all others grow out of it and are dependent upon it. Food and clothing are man's only absolute

necessities. The farmer supplies both. The farm interests stand between the great factors of capital and labor. Agriculture is both capital and labor. The farmer is his own capitalist and his own laborer. He, therefore, stands as the breakwater between organized capital and organized labor. The doctor urged that we must make at home what we consume.

A song entitled, "The Farmer's Home," was finely rendered by Prof. S. W. Dungan, Charles Dungan, Thomas Tilson and Sam Dungan.

In the absence of J. B. McGaughey, Alex. Heron, Secretary of the State Board of Agriculture, submitted the following hastily prepared remarks:

ADVANTAGES OF FARMERS' INSTITUTES.

One of the most important considerations in farm life is to cultivate sociability. As the ostracism connected with living in the country is the objectionable feature and prime cause of the tendency to seek the town or city, any kind of meeting, no matter by what name—club, grange or institute, is in the right direction and should be encouraged by all good citizens. In my experience, farmers' clubs are of the first consideration to accomplish the object named, and create a love for farm life. Every township should have its farmers' club to meet at intervals in the summer season at the homes of such members as take pride in their establishments, and invite such meetings, and in the winter months at some central locality. With several such clubs in a county, there would naturally follow a demand for regular Farmers' Institutes. In this connection I will remark, that it should be the duty of all County Agricultural Societies to hold monthly meetings, or institutes, during the winter months. They have all the machinery requisite for such meetings, and surely the object of such organization and the intention of the law in creating agricultural societies, is not solely to encourage the holding of annual fairs.

The time seems to have arrived for such institutes, judging from the zeal and interest manifested in those recently held, and the good to come from them can only be conjectured. It is encouraging to note the interest manifested in such meetings, compared with the efforts made several years ago. Then, with excellent programmes, the attendance was a failure, and several institutes that were in contemplation were abandoned for want of a promise from the highest executive officer in the State to lead off and draw a crowd.

The range of subject matter for consideration in this institute-work is very wide. First in importance I would place: how to make farm life attractive as well as profitable, thereby bringing contentment, the source of all happiness.

Farm life at present is not the same kind of business as it was forty years ago. Improved machinery has relieved it from the drudgery and there is more leisure time for sociability. But from my observation, there is less of it. Where are the singing schools, corn husking, apple parings and quilting bees of the times "way back?" If in existence they are not heard from. Why not resuscitate them in the shape of farmers' clubs, old and young taking part?

The progress of improvements have been so rapid that we are often amazed at the new discoveries, and the probabilities are that great changes will result from

recent discoveries. With the application of electricity in many ways, the economic use of the wonderful natural gas, we may expect to see in such districts thus favored large hot-houses, and early vegetables in abundance; spring chickens in the winter, and a Florida climate in our homes.

The saving of fertilizer is of the greatest importance. We notice frequently wagon loads of bones gathered up and shipped out of the State that are needed at home. How to save the waste of the cities is a question for the economist, as the waste by sewage and otherwise around Indianapolis is sufficient to fertilize the land for many miles around; and larger cities in proportion. Timely encouragement in that direction will prevent the sad sight of land turned out as barren in future years as is to be seen in the Eastern and Southern States. Some good hints could be taken from the older States and foreign countries in saving fertilizers by earth closets, which is applicable to country as well as city life. We could add to this almost without limit in showing the importance of care and attention in progressive agriculture, which is the basis of all prosperity.

We feel an unusual interest in visiting this county, that has sent to our museum the largest, best and tallest specimens of corn, and congratulate you on your rich soil.

During my experience in arranging programmes and soliciting lectures, we urge them to be brief and condensed, therefore I will endeavor to take my own medicine and give way to others better prepared to interest you.

J. W. Pierce, secretary of the Miami County Farmers' Institute, gave an account of their success in that county. He said the farmers organized with a membership of 185, and this had been increased to 750—actual membership. They had days for boys and days for girls, and prizes, aggregating \$125, were offered for largest and second largest delegations in attendance.

The paper on "The Grange Movement and Its Relation to the Agricultural Classes," by John Tilson, contained many interesting facts and good suggestions. He was aware that the grange is unpopular in Johnson County, because of mismanagement in the past. Through the grange and its influence we have the inter-State commerce law; the law protecting dairy products; the law creating the Department of Agriculture and the Cabinet officer, and the balance of trade has been held in favor of the United States. The farmers must organize and stay organized. There were eighteen granges at one time in Johnson County—four times as many as should have existed.

Dr. Brown followed with an address on "Diversified Farming," in which he urged that diversity of crops and products is necessary, both as a precaution against failure and because the soil demands it. If one crop misses another will hit. Different crops draw different elements from the soil. He is a believer in diversified farming, that is, the raising of small fruits, vegetables, poultry and fine stock. It relieves the monotony.

Prof. J. T. Hodgham said that no section of country in the Mississippi Valley was so adapted to diversified farming as is a stretch of fifty miles on either side of Indianapolis. He bewailed the fact that so many people are losing their appetite for the farm and that the tenant system is coming to prevail so largely. He did not believe much in æsthetic farming, nor in "industrial" education.

In the absence of President Smart, of Purdue, Prof. Stockbridge of that Institution gave an address on "Industrial Education." He detailed the objects and workings of that University in its various departments. He said that Indiana is the second State in the Union to make appropriation for the encouragement of Farmers' Institutes. His description of the working of the experiment station was of especial interest.

On Saturday the attendance was much better. After appropriate opening exercises, Mr. John Clore gave a talk on "Corn Culture, from the Seed to the Crib." He thoroughly covered the subject, and threw out many practical suggestions. He favored planting white corn, in check rows, and does not like the "pulling" of corn with the husk on. He places one man to a wagon when gathering. His talk brought out a breezy discussion by A. V. Pendleton, who believes in deep plowing, white corn, deep cultivation the first two plowings, and early planting. He did not thin and puts two and three grains in a hill.

John A. Polk never plows deep, and drills. He relies on fertilizing.

C. L. Ditmars prefers white, plows deep, pulverizes and "thins." Mr. Clore thought he had averaged sixty bushels to the acre in the last ten years. Messrs. Tilson, Pendleton and Ditmars thought this a too high estimate.

W. H. Dungan, in an able paper on "The Fence Problem, and What of It?" said the material for the old "Virginia worm" fence was exhausted and the farmer must look for something else. He advocated the smooth, hard, number 7 wire, as the most practical material.

C. L. Ditmars said permanency, neatness and economy are the characteristics of a practical fence. He believed that if the rails could be had, the worm fence, at \$10 per hundred rails, is the most economical. He, however, favors the woven wire and slat fence. He wants no barbed wire or hedge. John Clore said place "top" end of fence post in ground to prevent rot. R. A. Brown said too much fencing is required under the prevailing custom. The practice is not as good as the theory of the law warrants. One farmer ought not to be compelled to fence another out. J. L. Ray wanted a hedge fence for pastures, and S. W. Dungan favored smooth wire.

A. V. Pendleton, in his discussion of "Some of Our Mistakes of Horticulture," or lack of that culture, declared that the day of hog and hominy was past and that we must eat more fruits and vegetables.

In the afternoon, after a well rendered quartette by Messrs. Roland, Dungan, Roland and Tilson, Mr. J. G. Kingsbury, of Indianapolis, gave a talk on "How to Keep the Boys and Girls on the Farm." Give them a personal interest in all the management and products of the farm.

Prof. S. W. Dungan's paper on "Rural Life and Modern Rural Homes," was one of the most carefully prepared and best papers of the institute. Rural life affords the best opportunities for the development of the mental, moral and social faculties. Consequently rural homes should have the comfort and beauty to assist in developing the highest and best faculties.

Prof. C. H. Hall made a stirring and eloquent plea for education on the farm. Do not talk "money, money, money," as if the earth was made for money, instead of for the development of noble men and women.

Judge Banta always says something good. His address on "The Old Way of Farming," was a characteristic one and full of historic interest. The "old way" had to do with poverty, swamps forests and sickness.

In the evening the court house would not hold nearly all who came to hear Dr. Stott and Mrs. Ewing. Dr. Stott spoke on "Aesthetice on the Farm," and is a thorough believer in the beautiful and good on the farm. He believes in flowers, music, painting, tasteful decorations, modern architecture, best form for stock. On the farm is the best atmosphere, brightest sunshine, prettiest birds of song, most beautiful flowers, trees and meadows; there is earliest rising, and greatest freedom of activity and thought; and all these are the best conditions for the development of the beautiful.

Mrs. Ewing, Professor of Domestic Economy in Purdue. Her paper on "Our Kitchen Interests," was keen with suggestions as to ordinary cookery. She gave a practical talk on bread making and exhibited the dough, and bread made by her from flour obtained here. It was a fitting close to a most successful institute.

MADISON COUNTY INSTITUTE.

The second Farmers' Institute of the Seventh Agricultural District of the State, convened at the court house, Anderson, December 19, 1888. The district is composed of the counties of Hancock, Hamilton, Henry, Madison and Shelby. The first institute was held at Anderson last March, under the joint auspices of the State Board of Agriculture, the Madison County Fair Association and the Madison County Farmers' Club, the last named taking the initiative. The present institute was held in pursuance of a resolution which was adopted at the March meeting, that another institute should be held at some date in the early winter. The Farmers' Club and the State Board had the joint management of this institute.

The sessions were held in the Circuit Court room. The attendance was fairly good, but not so large as it should have been.

President Cory, of the Farmers' Club, called it to order at 11 o'clock. He stated briefly the object of the meeting to be the promotion of the interests of the farming community, not as farmers merely, but as citizens and the heads of families. He then called for the election of officers for the permanent organization. On motion Hon. R. M. Lockhart was unanimously chosen president, and Ziba Darlington, secretary.

On taking the chair Mr. Lockhart returned thanks for the honor conferred upon him, and spoke pleasantly of his acquaintance with the people of Madison County last March. He stated that this institute would be the first of a series which would be held throughout the State during the winter, and his confident expectations that great good would be accomplished.

Mr. Granville Cowing, of Delaware County, being on the programme, sent an essay to be read. It was read by Stephen Metcalf, the subject being,

DESIRABLE NEW POTATOES.

For many years I have endeavored to test all very promising new potatoes, and have recently met with a number which promise to be of great value. That the best varieties will finally fail and become worthless I have no doubt; and the only remedy is to produce new and more vigorous sorts, better adapted to changing soil and climate to take their place. Within the last ten years I have twice grown the old Meshannock potato, and although it was planted in good soil and was well cultivated, it produced but a few small, rough and worthless tubers. A writer familiar with the Chicago market says there are some twenty varieties sold in that city to-day for Early Rose which are not of that variety. In fact, genuine Early Rose are rarely seen there. The same is true of Peerless and Burbank. Mammoth, Pearl and a dozen other varieties of round Russet species are sold for Peerless, while the White Star, White Rose, Jordan's Prolific and other long white kinds are sold for Burbank.

The selection of pure seed of the best varieties would probably double the potato crop of the country without enlarging the area planted.

Of new varieties of the Early Rose type I have found Lee's Favorite, Early Pearl and Early Maine very productive and in every way desirable. They mature with Early Ohio, are of the best quality, and their tubers are generally smooth and shapely. New Queen and Sunlit Star, early varieties of more recent introduction, promise to be the most productive varieties of the Early Rose type yet offered to the public. Sunlit Star is an extra early variety, with tubers uniformly large and smooth, and of the best quality. New Queen matures ten days later, and is also remarkably productive, tubers generally large and smooth, and of good quality, and like the Early Rose in appearance. I planted one pound of seed of this variety last spring, which, without petting and unfavorable weather, produced ninety pounds of fair tubers. Charles Downing is an early white potato, decidedly productive, with smooth tubers, generally of marketable size and of the best quality. On account of its fine flavor, appearance and greater productiveness, it promises to take the place of Snowflake in the Boston market, where that variety has long been a favorite. Of late varieties I have met with none as good in all respects as the State of Maine, Green Mountain and Empire State, all in color and shape somewhat like Burbank, but all much more productive, of better flavor and with tubers uniformly large and handsome.

Green Mountain and State of Maine mature in August. Neither of these have quite equaled Empire State in productiveness, but they are, I believe, of rather better quality. In points of quality I regard State of Maine as one of the best I ever tested. In productiveness and ability to successfully withstand drought and beetles I have seen no variety equal to Empire State. This season but four per cent. of its tubers were too small for market.

DISCUSSION.

President Cory. I tested two new kinds last spring, the Everett and Green Mountain. The Green Mountain is a pretty good potato. The Everett is an early variety but it does not grow smooth enough; the eyes are a little too sunken. I do not know much about their cooking qualities. I have been growing Mammoth Pearl for several years, and have had no potato to give the satisfaction it has. It grows uniformly, is large, quite smooth, and never has any hollow in it, no matter how large it grows. If I were sending for seed potatoes in either direction north or south, I would send north always.

Mrs. Mary Roberts. I feel very glad to learn that there are better potatoes than the Burbanks. I think there are other kinds better for cooking and that are more productive, perhaps, than they are. It seems the borers have disturbed them more for us this year than any others. The Burbanks are a very strong potato and I do not like them for cooking. If they are cooked in a kettle used only for this purpose the kettle will become black in a very short time.

R. M. Lockhart. Have any of your people had foreign potatoes shipped in, which have been planted for seed?

Wm. Stanley. I only tried a few, just as an experiment, and I don't think they are worth raising. The seed came from Germany.

Mr. Lockhart. We had two or three years ago quite a quantity of foreign potatoes shipped in. The experience Mr. Stanley gives has been about our experience. Those that were planted were small, insignificant things. Some farmers determined to go ahead with them and try to make something out of them, but they have failed to make anything out of those potatoes. Did you find any way to keep the wire worms from working on the potatoes this year?

Mary Roberts. We found no remedy for them, but I think the worms did their work, not when the vines were in a green state, but after the potatoes had matured. The potatoes were allowed to remain in the ground too long after they were ripe.

Mr. Lockhart. I have found this to be a fact, that where we salt the land thoroughly potatoes have grown very finely and I can show some as handsome potatoes as were ever taken out of the ground. We have had the worms to commence on them very soon after they were in condition for eating. Our people of course are experimenting all the time. I think it will be better to bring our seed potatoes from the north than from the south.

Edward Roberts. The patch where we planted our potatoes was on the south hillside where it had not been plowed for years. I think the worms were in the ground and mostly these little white grubs were the cause of the injury to the potatoes. I wish to say this, if any one wishes a new variety of potatoes, I don't believe they can get any authority in this section of the country better than Granville Cowing, of Muncie.

T. M. Hardy. I want to know what it is that produces the roughness of the potato, what it is that causes the potato to be worthless a short distance inside the rind? I think with all my reading that it is not known what it is, but it is supposed to be a fungus growth and your use of the salt will probably be a great aid

as a preventative. But I notice that when barn-yard manure is heavily used it is often times worse. If any one has found a remedy I would like to know what it is.

Mr. Lockhart. This roughness of the skin of the potato is caused by an insect, not observable to the eye. We are not troubled much with this roughness in our locality, as where salt has been used the skin will be perfectly smooth.

Michael Bronnenberg. I am like the lady. When potatoes first mature they are not rough. It is not a bug at all that causes it, but a little brown worm, resembling the wire worm exactly. They will take all the corn as fast as you can plant it. You plant potatoes in new ground and you will never have trouble with these worms.

J. C. Beesom. The experience of Mr. Bronnenberg is the experience I have had in growing potatoes. I find the same wire worms in my potatoes when I dig them in August. There is a brown rust forms around the place where they eat that remains. I see the same worm in my wheat field doing damage. Last year my potatoes began to have black streaks running through them; this year these streaks look like veins running through the potato. Probably half the crop was this way.

Samuel Hughel. This year I planted two plats of potatoes. One was a plat where I had fed my hogs. I plowed it pretty early in the spring, and planted the potatoes about the first of May, but did not dig them very early. The other plat was planted about the 20th or 25th of May. There was not quite an acre in the plat, and I dug 275 bushels of potatoes, the prettiest I ever raised. The varieties planted were the Early Ohio and Early Vermont.

Mr. Hardy. I think the world is ignorant, completely ignorant of the cause of this potato scab, and a fortune awaits the man who will find out exactly what it is. Many persons will persist in the belief that the worms are what cause it altogether. Now they don't know that this fungus will grow and there will be nothing perceptible to show what causes it. It is a very difficult matter to find out what it is, and experimenters have failed to discover the cause.

McFarland Black. I want to ask why early potatoes are more apt to suffer than later ones? It was my conclusion for a long time that the Colorado bug did the mischief, but I hardly think now that it does. I find that early potatoes are injured more than any others, and Early Rose the worst of all. I usually harvest my potatoes as soon as they are ripe, and they are more or less injured. I think it will do to bring seed potatoes from the North, but not from the South, because the latter will not ripen in our short seasons.

Mr. Swain. There is one thing that I have noticed in this wire-worm business, and that is, I have always found them worse where there were corn-cobs. Last spring I planted two plats of ground in potatoes, and one of them I manured pretty thoroughly. Well, this fall in digging the plat I manured heavily, I think there were nearly three-fourths scabs; in the plat that was not manured I did not see anything of them. Two years ago I planted a plat where I had fed the hogs, and these wire worms were very bad there.

AFTERNOON SESSION.

On reassembling, Mr. D. L. Thomas, President of the National Swine Breeders' Association, delivered an address on "What Horses Should Farmers Raise?"

In order that we may reach an understanding of that question in a practical way, I will raise the question, What is your object in raising horses? I fancy at first thought that many will say, "Oh, we raise them to work." Well, that is true as far as it goes, but is that all? Is it not your object to sell the colt after it becomes a horse? I take it that it is true that the object is to sell it. The farmer who raises horses for his own use only, takes a short-sighted view of their value.

Assuming, then, that the ultimate object is to sell them, the next question coming up is, What kind of horses can you raise most profitably for your market? Farmers as a class don't study as a business like men in other occupations. Why, if business men did not study their own interests, they would all go into bankruptcy at an early date. You see at once that the importance of farmers acquainting themselves with the kinds of horses that are needed in a market, and these things should be studied as intelligently as a business man studies his business. You must feel the pulse of that market and know what is wanted, and how the prices rule. When we go to the cities we find horses of all grades and conditions. The most common horse of the United States goes by the name of "plug." That is the horse that is raised by most of the farmers of this country. Take up a report of the market and you will see how the plug rates in the market.

Now, gentlemen, have you carefully figured what it costs to raise a horse to maturity? If not, do so at once. In England they figure a cost of \$80 to raise a colt to three years old. I have figured on it, and I believe I can discount that to some extent. Eighty to one hundred dollars is the top of the price for a plug horse. Now, there are a great many farmers in the United States who raise plug horses and sell them for \$80 or \$100, and then imagine that they have cleared just that much money, because they think it never costs them anything to raise them. I tell you if they kept account like a merchant they would come out in debt every time.

We find that there is a large percentage of horses that don't pay the farmers to raise, but there are others that do pay. There is the light harness horse and the heavy draft horse. Any of these, if they are raised as they should be, can be raised with profit. What breed you should favor depends very much on circumstances. When you go to raise a horse or a class of horses, having learned the types that go to market, the essential thought before your mind ought to be what suits your fancy. The man that dislikes a heavy draft horse should never handle one; the man that does not like a light-harness horse ought never to handle one, because he will never like it. I want to say to you that any person that undertakes to handle any kind of stock that he don't like will never have success. If you just think back over your own experience you will find that whenever you had an animal that you liked you never could do too much for that animal, and whenever you

had something you disliked your care was grudgingly given. While I have a natural liking for hog raising, I never could like an elm-peeler, and if a man was to give me one to-day I never could do justice to that hog. I should feel every time I threw him an ear of corn as if it were just that much wasted.

The same is applicable to horses. I have a friend that comes to visit me once in awhile, and I begrudge his horse the feed every time I go out to feed him. A horse which pleases my fancy I can care and wait upon with better relish than any other class. If I can only impress this upon your minds that you can meditate upon it to-morrow and treasure it up, so that in after life it may come to you many times more than at the present time and do you some good, I shall be satisfied.

Leaving this question that you in raising horses have the ultimate object in view of selling them in market, and that being the case it is your duty to learn what classes can be best raised at a profit, and to select that type which suits you best, then I say figure closely upon what it costs you to raise that horse from colthood up, and if you can't make money bestow your feed in another direction, and go out of the horse business. When you decide upon a certain type study that type well, and when you are rearing colts study well the disposition of the parent stock. Under no consideration breed a strain that is ill tempered. I will give an illustration: I had a mare some time ago that cost me more money and more vexation in breaking, "because she had a head of her own," than any other horse I ever owned. I sold her for a great deal less than she was worth, but now if the man were to come back and present her to me as a gift I would not have her, although she is finely bred.

DISCUSSION.

Mr. I. Peed. Mr. Thomas, I think, has covered the ground in regard to the subject on the program, "What Horses Should the Farmers Raise?" I suppose that means for profit. There are three or four types of horses that pay and you can raise at a profit, and all that is left for you is to determine what type you fancy. There is certainly no profit in raising a plug.

I try to have my horses ready for market at three years old. My fancy was to have two breeds, heavy draft and trotting horses. There is no general farmer who raises draft horses of either breed, if he will raise the best, but what he can raise it at a large profit; and it is also true of every thoroughbred horse. When he is four years old he is ready for the market. In our county we probably raise as many draft horses as in any county in the State. They are worth from \$175 to \$250 or \$300. There is certainly profit in that. It is true it costs more to begin with than it does to raise a plug, but the raising is exactly the same, and either just as cheap as you can raise a steer at three years old, and if the farmer gets \$60 for a steer at that age he considers it a profit.

Abisha Lewis. I have had a little experience in farm life, consequently I have something to say about raising horses. The best way for me is to raise the kind to suit the market that I am in, and I don't think it would be amiss for me to raise the kind that suits me best. The expense of raising a good horse and a poor one

is just the same. Certainly we get the better returns from the nice driving horse or heavy draft horse than any other. The reason that there are so many plug horses is that there are almost always plug farmers to use them. It comes very handy to have a plug horse to suit a driver, and as we have more men of small means it becomes almost necessary to have a superabundance upon the market.

Hon. John B. Connor, President of the Indiana Farmer Company, then took up the subject of

DAIRY FARMING.

There is no success anywhere at anything without the prerequisite of intelligence. More than three million square miles, of at one time the most fertile land in the world, the peninsulas of the Mediterranean, are forever lost in sand drifts. Once supporting a vast and prosperous population, that has decreased sixty millions, and squalor is seen on all hands. For centuries these fertile lands were pressed to productions under methods of culture which returned nothing to the soil, until utter exhaustion overtook the whole country. For a while it looked like the story was to be repeated in some of the northwestern sections of this country, where spring wheat yielded great crops, and little attention was given to live stock industry, for the lands began to show strong signs of exhaustion. But profiting by the lessons of history, these sections turned their attention to live stock and dairy industry. There are millions of acres utterly exhausted lands in Virginia which once yielded bountiful crops under methods of culture which never returned anything to the soil. And so I repeat that the increment of profitable agriculture, as in every other pursuit, is to be credited first to intelligence.

It is known that a very much larger per cent. of flour is now obtained by the new processes of grinding wheat, than formerly under the old systems of milling. The man who would adhere to the old mill methods of producing flour would make a sorry contest with the new processes, and would soon find himself beaten in the race and impoverished. And so it is at the first step in the dairy industry. The spindle and the loom work up raw material into calculable products which bring so much in the market. But a cow does not count so definitely. It is understood that she is a machine for the production of milk, butter and cheese. But neither by her size or color, nor yet always by her form, can we count definitely on so many pounds of finished products from a given amount of raw material. And so at the first step in profitable dairy farming is intelligent selection and breeding. No amount of skill in the after work can compensate for this, or bring success. An acre of land is worth so much, and it will produce so much grass and grain. As to results it makes little difference whether we throw the products into sea, or feed it to a cow that will make but three or four pounds of butter a week, for either means bankruptcy, and the Sheriff is not just around the corner in hot pursuit of such a farmer. So we see at the threshold of the dairy business that, as the old mill can not compete with the roller process, so the three-pound-a-week scrub cow has no business to stay an hour in the farm dairy herd. She will consume the product of two good acres of land annually, and hardly pay taxes on it. But a good cow so utilizes the grass and grain of a farm as to divide equibly between

products and a return of fertility to the soil. If she gave us all in product, then dairy farming would be as exhausting as grain farming alone. Then does the poor cow return fertility to the soil in proportion as she produces little milk and butter? No, must be the answer to this query, for by experience and observation it is known that the excrements in quality and quantity are no greater with the poor than with the good cow.

Do you then ask what becomes of the food when equally fed to both? Perhaps we have the answer in reply to a similar query as to what becomes of the expended force and heat from the same quantity of coal under boilers driving the same sized engines. One engine turns out fifty horse-power and the other only twenty-five, and yet the same quantity of coal is used for the production of steam for each. Friction overcomes power. And for the want of a better term it may be said that friction somewhere in the machinery of digestion and assimilation is the trouble with the poor scrub cow that produces but three pounds of butter a week out of the raw material which is utilized by a well-bred one that produces seven to twelve pounds. And so by such careful analysis of this matter we get back to the question of the absolute importance of careful selection and good breeding, and that intelligent management at this point of the dairy farming industry is as important as mechanical skill in the construction of engines. The friction that hinders and obstructs success in the one and the other must be avoided or overcome. No cow should be tolerated in the dairy herd that will not with good feeding and care in management produce one pound of butter per day. The silo and ensilage have come to the rescue in these times of close margins, and he who heeds not this method of preserving food for the dairy herd will find the competition pushing him close after a little while. By this process green, succulent food may be had the year round, the grazing for four or five months, and feeding ensilage and mixed feed the remainder of the year.

Ensilage is a summer food, on account of its succulent character; and let it be understood that we must keep and care for animals to be fed as near to summer conditions as we can. Warm stables must be provided for cows fed on ensilage, if good results are to be obtained. In the matter of feeding and results at dairy farming, at least on a scale to test its value, let me refer to one who has given this test. It affords details that are valuable: The cow comes fresh on the first of October, and for a month she is grazed on blue grass, and given some shock corn and ten pounds of wheat bran per day. Then, November 1, winter feeding is begun, and proceeds till grass comes in May, about 200 days. The daily feed for an average sized cow is about 45 pounds of ensilage, ten pounds of wheat bran and 10 pounds of good hay. This is divided into two feeds. So by the middle of May, including the shock corn, five tons of ensilage, one ton of hay and 2,250 pounds of bran are fed. She went to grazing then from May 15 to September 25, and was also fed per day 4 pounds of bran and what ensilage she would eat, and then went dry until October and was grazed. Besides the bran, which costs \$15, it requires the product in hay and ensilage of less than two acres of land to keep the cow one year. During the period milked she averaged one pound of butter per day, or 225 pounds, which sold on the market for about 25 cents per pound. Thus the butter

brought about \$60 from this cow. The feeding value of the milk was found to be worth \$12. The gross product for this one, including the calf, was \$80 for the year. The bran to feed her costing \$15, the pasture and fodder worth \$10, left \$55 for the product of two acres. Deducting the interest on this and the labor in keeping the cow, churning and marketing, left a good income from two acres of land. This was the experience with a butter dairyman with twenty-five cows, and one only is mentioned for convenience of illustrating the results. And it should be remembered that one pound of butter a day for such keeping is the smallest amount. Many dairy herds of good grade cows yield considerable more than that on an average for the ten or eleven months. With a better knowledge of growing, preserving and feeding ensilage, and we are not far removed from that time, the product of a single acre of good land will keep a cow that will produce on an average of from one to one and a half pounds of butter per day for ten to eleven months of the year. It has been found that with feeding ensilage the cow's ration costs about 8 cents per day. This includes the bran and hay in addition to the ensilage. During the cold winter months the water given cows should be warmed, at least to the summer temperature of running streams. The value of this has been over and over demonstrated. Winter dairying has been found much more profitable than summer. Besides the higher price obtained for the butter during the winter, there is plenty of time to pursue this industry by those engaged in mixed husbandry. During the spring and summer months the farm crops require the constant time and attention of such farmers. But these saved and out of the way there is plenty of time to pursue the dairy business, and to do it right. A successful butter dairyman, who makes ensilage the basis of his ration, says: For ten years I have kept 12 to 16 cows, and averaged for the past seven years over \$1,000 a year net from the sale of butter alone. Last year it amounted to \$1,243. He says that by careful selecting and testing his mature cows produce 357 pounds of butter each per year, and the gross returns on each is \$107. He feeds bran right through the grazing season to the cows running on pasture, and finds that it pays well.

One other thing in connection with this matter deserves attention. There is a vast amount of poor butter and cheese made, and a great quantity of fraudulent butter is sold for pure butter in the markets. This State, as many others, should have a Dairy Commissioner, with funds and authority to employ a skilled butter and cheese maker, who should hold dairy schools for a week in different parts of the State for publicly instructing those desiring to pursue the dairy industry. This would soon add greatly to the value of the product in the State, as the poor stuff which passes for butter would soon disappear from the markets. The Dairy Commissioner should be authorized by law to inspect butter on the market, detect and drive out the fraudulent stuff made from grease and oils, and thus give the public a pure article, and the producer a fair price for it.

Dairy farming and the live-stock industry are the sure methods of keeping up the fertility of the farm, and whatever contributes to the encouragement of this, will add to the common prosperity and happiness of all the people.

DISCUSSION.

Dr. Furnas. I want to ask a question. One declaration of the paper was that the dairy is most profitable in winter. That is not the way we understand it. I notice quite a number of our dairymen going out of business. How is it?

Mr. Lockhart. During the growing season the farmers are exceedingly busy and this matter of dairying is a minor matter in the the thought of the general farmer, consequently dairying has been found more profitable in winter than in summer, especially since the discovery of the process of keeping the food as full of succulent juices as in the summer. I refer to the ensilage system. Thanks to this system, the products of the dairy bring more in winter than in summer. The ensilage has taken the place of grass and is the equivalent of fine blue-grass pasture.

Dr. Furnas. I noticed that the paper said to feed wheat bran all through the year. It seems to me that argues that they keep more cows than their grass will sustain.

Abisha Lewis. My wife recommends the feeding of bran, morning and evening throughout the whole year.

Mr. Lockhart. There are but a few silos in this State. Wisconsin is far ahead of the other States of the Union in the matter of building silos. They are not expensive and are of great utility. One can be built at a cost not to exceed \$100. The amount of green food that can be stored in one is wonderful. It is corn that is raised especially for that purpose. I am told by those who are using it that it will make as good a flow of milk in winter as blue-grass in the summer season. The silo should be built into a bank, as that is the cheapest way, and a solid stone wall on each side with an opening left on one side of the hill.

Dr. Furnas. What about stabling cows? I keep a few cows all the time and the more I shelter them the better results I get. Just go out to the stable some cold morning when you think you have your cows pretty well sheltered, and try to milk, and see how cold you get from the wind that comes through those great cracks in your stable.

Mary Roberts. I think there will have to be a little change in the feed of cows if dairying is made profitable. The way it is now there is little profit in it, because the milk don't yield the cream, nor the cream the butter that it should.

Dr. Furnas. I did not believe there was anything in this thing about Jersey butter being any better than Shorthorn butter. I estimated butter just like I do a horse, and when the butter was yellow I thought it was all right. Some of these men who keep Jerseys said they would show me the difference if I would bring them a sample of my butter. I did so, and one of them took a knife and broke off a piece of my butter and began to criticize the grain. Why, I never knew anything about the grain of butter before. Then he broke off a piece of the Jersey butter and showed me how smooth and even the grains were. I could see a difference between the two kinds, but could not taste any difference myself. While the Jersey may be good enough for butter, I am not favorably impressed with it as a

general purpose cow. I am almost ashamed to keep my Jerseys in a field next to the road, they are so small and appear to be of so little account when standing beside their more favored sisters of the larger breeds.

Joel Garretson. We keep one cow, a Jersey, and she is fed bran twice a day throughout the year. In the winter time she has a good warm place to lie. As far as feed is concerned, I think it just as profitable to feed in summer as in winter. As for the Jersey cow for milk and butter I believe she will just beat the world. I like to milk her.

J. S. Stuart. I think it best to have a stable for cows, and if you feed, water and milk them regularly you will get an increase in the flow of milk. Feed them some kind of grain; don't give them frozen pumpkins in the winter and expect them to give a good flow of milk. Feed back to them all the refuse milk instead of giving it to the pigs. They will drink sour milk and buttermilk and soon get used to it. For years I have kept up the flow of my cow's milk by feeding her all the refused milk we have in the winter time. We warm it before giving it to her. Breed your cows to become fresh in the fall. Learn to have a fresh cow all winter.

D. L. Thomas. It is absolute cruelty to animals to feed them on one thing the year round. How would one of us like to live all summer on pound cake alone? Better have blue-grass and rag-weed mixed, than blue-grass alone. I would not blame a farmer's wife or daughter if they raised a rebellion at any time, if they are forced out to milk in the storm. That is worse than cruelty to animals.

Mr. Peed. Would it not be better not to allow the wives and daughters to milk at all?

Mrs. Roberts. I never used coloring in butter but twice and the last time I said I never would use it again. It did not taste right and I know it did not look right. I could not bear the sight of it nor the taste, knowing I put it in. As far as the milking is concerned, I don't intend to milk and haven't milked but twice in the last fifteen years.

Mrs. Hardin. I would like to ask if all Jersey cows are good. I think it not altogether the food but the cows that makes the difference in milk. I have had common scrub cows do as well and better, than cows of better breed. As to feed, I think they need a change. Wheat bran is the best I have ever used; clover hay and corn fodder are good.

Mr. Peed. I advocate the use of coloring matter in making butter and I know no one can tell it. It adds only to its looks and I would use it on that account alone as yellow butter tastes better to me, besides it sells better.

S. T. Bronnenberg. As far as taste is concerned that is all imagination. If I go to a restaurant and there is a dish of butter on the table that is white and clear looking, I have no taste for it at all, but if it is nice yellow butter I can eat it if it is a little strong. We buy sugar, tea, coffee and all our groceries without knowing what is in them or how they are made up, and what is the difference about coloring for butter? We can make from three to five cents a pound more by using it.

EVENING SESSION.

The peculiar feature of the Institute which awakened much interest was a lecture by Mrs. Ewing, Professor of Domestic Economy, at Purdue University, entitled

OUR KITCHEN INTERESTS.

Mrs. Ewing said:—A great deal is said about our Agricultural interests, our Manufacturing interests, our Commercial interests and the numerous other interests that are closely intertwined about our social fabric; but in the general discussion we hear comparatively little about the interests that, in importance, outrank and overtop them all—our Kitchen interests. The kitchen is the pivotal point upon which a large majority of our material interests revolve. There are in the United States alone, at least eight million kitchens, and the principal mission of these kitchens is to prepare the daily food of some sixty millions of men, women and children. What other interests begin to compare in magnitude with the interests that radiate from these eight million kitchens?

Statistics show that we use in this country, for human consumption, every year, 45,000,000,000 pounds of flour and meal, 10,000,000,000 pounds of meat and fish, 1,500,000,000 pounds of poultry and game, 425,000,000 pounds of coffee, 80,000,000 pounds of tea, 19,000,000,000 eggs, 150,000,000 bushels of potatoes, 25,000,000 bushels of beans and peas, to say nothing of the immense quantities of other vegetables, fruits and food products of every variety that go toward making the national dietary. Can any intelligent person think for a moment of the tons and tons of products of every kind, comprising the entire food of the nation, that passes through these kitchens daily preparatory to its reception in the stomachs of this vast multitude of human beings, and candidly say the preparation of all this raw material, its conversion into good wholesome, nutritious food, is not a question of considerable concern? Would it be too strong a statement to say it is a question before which every other question might with advantage to humanity be permitted to dwindle into insignificance?

Let us consider this matter carefully. Of the 600,000 barrels of flour and meal of various kinds that are daily manufactured into bread, rolls, pies, pancakes and other things in these eight million kitchens, how much is fit for food? Throw aside all that is heavy, sour, half-baked, indigestible, and unfit to be eaten, and how much that is sweet, savory, and nourishing, that will yield good, healthy flesh, blood, bones, nerves, and impart strength and vigor to the physical or mental system, will remain? Of a beverage produced from the million and a half pounds of tea and coffee that are daily steeped, stewed and put through unknown processes in these eight million kitchens, how much is anything but the vilest slop, a miserable decoction deserving only indignant execration?

Of the thirty million pounds of valuable food stuff in the shape of fish, flesh and fowl that goes into these kitchens daily, how much comes out of them cooked as it should be, in the best possible manner, in the manner that will afford the

greatest amount of nutrition and best satisfy the appetite? But why proceed with the list? If one could demonstrate with mathematical accuracy the immense proportions of this good material that is wasted, or worse than wasted by being improperly cooked, so as to estimate its value in dollars and cents, the amount would assume such gigantic proportions that it would astonish and bewilder the penurious, and startle with amazement even the prodigal. It seems an easy matter to cook a potato, but of the half million bushels of potatoes that are handled every day in the eight million kitchens how many are cooked as they should be? Surely any one can not fail to notice the difference in a potato that is sent to the table "done to a turn," white, mealy, tempting, delicious, and one that is served up in the conventional style, dark, soggy, uninviting and unpalatable; or between a dish of light, snowy-looking mashed potatoes and a dish of the lumpy, greyish-colored stuff so frequently served under that name. Yet the difference is mainly in the method of preparation. And as with the potato so it is with nearly every article of food.

Between an apple properly and improperly baked there is a marked contrast. The former is highly flavored and spicy, the latter flat and insipid. The traditional stewed prune is a rather discouraging morsel. But a prune properly stewed is a delicacy that would be enjoyed with astonishment by most of the people who are confirmed skeptics on the subject of prunes. An ordinary dried apple pie is about as uninviting an object as ever the hungriest school boy cares to taste. But dried apple pie properly made seldom fails to elicit encomiums from the most fastidious epicure. The worthy looking loaves that bakers generally keep on sale in their shops or carry about in their pretty carts, and delude innocent people into believing to be bread, are as dissimilar in form, and as inferior to genuine, sweet, flour bread, such as is nutritious and wholesome and should be on every well-ordered table, as those decoctions, ordinarily served as tea and coffee, are dissimilar from, and inferior to the genuine infusion of the Chinese plant or the Arabian berry.

People accustomed to oatmeal, hominy, crushed wheat, and similar grain products properly cooked, often wonder how any one can fail to relish such delicious dishes. But an acquaintance with a wretchedly inferior manner in which they and other cereals are usually prepared would dispel the wonder and render them curious to know how any one could ever grow fond of food so barbarously cooked. To me it is often a matter of astonishment that under our present crude system of cooking nearly every article in the national dietary doesn't become as repulsive to the average stomach as the split herrin woodsy plums and "tamal white beans" did to Grandpa Hagarty Spirer.

Did not Lord Beaconsfield say truly: "A cup of good coffee is the most delicious, but the rarest beverage in the world?" And do not the nice, evenly-browned crisp slices of toast, some skillful culinary artist occasionally, but ah! how rarely, sets before us, confirm the statement of a lady of wide experience, that not one cook in ten thousand can toast a slice of bread properly? Our numerous benevolent associations, our different religious denominations, our various political organizations, are nearly all represented by ably conducted, well supported journals. The lawyers, the doctors, the druggists, the dentists, the farmers, the grocers,

the millers, the miners, the masons, the carpenters and builders, the tailors, the shoe-makers, the stock-raisers, the gardeners, the poultry-growers, the bee breeders, the dry goods dealers, the school teachers, the candy makers, the tobacco manufacturers, the bakers, and scores of other occupations in which a respectable number only, of people are engaged regularly, have their trade or specialty publications, devoted to the improvement and advancement of their respective employments, and issued weekly, monthly, quarterly, or as often as patronage and circumstances demand and justify. But where are the publications devoted to the interests of the kitchen?

According to the census of 1880 there were in the United States at that date 550 journals devoted to religion, 250 to education, 175 to agriculture and horticulture, 280 to commerce and trade, 45 to law, 25 to banking and finance, 114 to medicine and surgery, 68 to science, 150 to temperance, masonry and odd fellowship, 200 to general literature, 8,800 to politics and news, and so on to the end of the list. But about the journals devoted to the culinary art and domestic economy? Alas! They are so rare that the census taker failed to find them; or so obscure, when found, that they failed to make a note of them. In the light of these facts one naturally inquires, why is it that we are so lacking in journals devoted to cookery, housekeeping and household science? Is it for want of readers, or want of writers? Is the literary ability of those skilled in household arts so limited that they are incapable of imparting information to their unfortunate neighbors? Are those who prepare our food so self-satisfied with their restricted knowledge that they wish for no further information in regard to the best methods of preparing various articles of diet? Or are those who act so indifferently to the quality of food, or to its effects upon their health, habits and character, that they care to know nothing about the matter? Do the inmates of the millions of homes scattered all over the land want enlightenment upon every conceivable subject but the preparation of food and the performance of house work? Is no additional knowledge needed in the eight million kitchens, where every variety of material is being mixed, mingled and combined hourly for the sustenance of this mighty nation? Do old men and old women, young and old, really take more interest in all other subjects than they do in those that most vitally affects their health, comfort, and every-day life—cookery, household economy, home making.

It is humiliating to acknowledge that among all classes of our people there exists a lamentable ignorance of even the elementary principles of the culinary art. But of the millions of men and women engaged in preparing food, how many are acquainted with the best methods of making and baking bread? How many know the best size and shape for bread pans, or the proper temperature of an oven for perfect baking? How many of them know anything about the gluten, starch, and other elements of the flour and meal they handle daily? How many of them know anything about, or have ever heard, of the vinous, acetic, lactic, or other fermentations that are carried on in dough by yeast, leaven, and "salt risings"? How many of them know there is the slightest difference between sweet, wholesome bread made with pure yeast, and that foul abomination made with "milk emptyin's" or "salt-risin's"? How many of them know there is the slightest difference between tea and coffee made with hard or soft water, or with water freshly

boiled and water that has been boiled for hours and stood in cooking in the kettle until all the gas has escaped—all the life and sparkle departed from it? How many of them know whether a fish should be put to broil with the inside or the skin side down? How many of them know whether vegetables should be put to cook in cold, hot or boiling water? and whether water should be fresh or salt? How many of them know the length of time required to cook rice, barley, oatmeal, hominy, crushed wheat, farina or cerealine? or the proportion of water to grain necessary for cooking properly and of the different cereals and farinaceous foods? How many of them know anything about the laws that govern roasting and baking, broiling and frying, boiling and stewing, mixing and flavoring? But why proceed with such specific interrogations? Of the millions of men and women who are engaged almost constantly in preparing food, how many can make a loaf of bread, broil a steak, boil a potato, prepare a cup of tea or coffee, and get up a plain, healthful, ordinary meal, in the most perfect manner—in a manner satisfactory to a refined, cultured taste?

Far be it from me to speak disparagingly of the cookery of our ancestors. Much of it was carefully and conscientiously done, and the 'spicy flavors of "mother's good things," still lingering on the palates of grown-up boys and girls, are as dear to memory as the blooming times of faded childhood. But I can not refrain from saying that the inherited beliefs entertained by so many, about the superior cooking of the past, are mainly musty traditions more venerable than veracious. Is it reasonable to suppose that bread raised by a putrefactive process induced by "salt-risings," can be as beautiful as bread raised by alcoholic fermentation, which is simply a result of the natural growth of the true yeast plant? Is it reasonable to suppose that one of the clumsy old brick ovens, which consumed a cart-load of wood in heating up, and did the family baking for a week while cooling off, could be made to bake as perfectly as the modern oven, the temperature of which can be lessened or increased at pleasure, or can be maintained at the desired degree any length of time? Is it reasonable to suppose a goose, a turkey, a fish, a joint of meat, or anything else, can be roasted as perfectly before an open fire, where only a portion of it can be exposed to heat, as it can in a closed compartment where it can be subjected to the same degree of heat on all sides during the entire process of roasting or baking? Science, common sense, practical experience, all sustain me when I assert that the good old ways of cooking practiced by our grandmothers, for which poetically-inclined people sigh, are far surpassed in every respect by our improved, modern methods. Should not then the cookery of to-day be as much in advance of the cookery of our ancestors as many of the industrial occupations of to-day are in advance of the same occupations as conducted by our ancestors? With all the modern improvements for cleaning and milling grain, and all the recent discoveries in regard to yeasts and ferments, should not the bread of to-day be far superior in quality to the bread eaten by our grandfathers and grandmothers?

With all the recent inventions of stoves and ranges and culinary utensils of every kind, should not the roasts, and steaks, and poultry, and fish, and all the food that goes upon our tables be better cooked to-day than it was in days gone by? Spinning, and weaving, and knitting, and dozens of other onerous duties that

used to be essential parts of housekeeping have been eliminated from that department, and sewing machines, and sweepers, and washers, and wringers, and numberless other labor-saving implements have been introduced into the homes of all classes, giving more leisure for the study of culinary science and domestic economy, and improved opportunities for the practical application of such study. But are our meals any better cooked, our houses any better kept, or our homes made any brighter, pleasanter or cleaner than they were a hundred years ago? Do not such glimpses as we can get in the houses of that period compel a negative answer? The supply of food material in this country is illimitable. The variety is infinite. The quality is excellent. But the methods of preparing it are execrable. Prof. Youmans said: "Our kitchens are the fortified entrenchments of ignorance, prejudice, irrational habit, and mental vacuity." And must we not, to the shame of American women, acknowledge the truthfulness of the terrible stinging arraignment?

A continually increasing call for more information on the methods of conducting their pursuits comes surging up from the toilers everywhere, except from those in the kitchen. From them is heard no perceptible murmur. They appear to breathe an atmosphere of ignorance, or self-satisfaction, so dense that it stifles the desire for knowledge or progress. It is universally conceded that for raising grain, fruits, vegetables, live stock, and other articles of human food, more information is desirable. Is there not more information desirable in regard to the proper method of preparing those grains, fruits, meats, vegetables, and other food products for the tables? If the application of scientific principles to the growing and raising of food materials is productive of beneficial results, will not the application of scientific principles to the conversion of those materials into food be productive of equally beneficial results? Shall the farmers, and gardeners, and fruit growers, and stock raisers, go on improving their ways and methods and the housekeepers and cooks remain stationary in theirs? Is the knowledge that has been obtained in regard to yeasts and ferments, and the advance that has been made in milling grain in the last quarter of a century, to be followed by no improvement in making bread? Are all the recent discoveries regarding the nature of heat and the properties of food to be barren of practical results so far as culinary processes are concerned? Is the study of botany, or chemistry, physiology and hygiene in our schools, in no way to improve the quality of the food in our home? Is improvement possible in every direction but the direction of the kitchen?

Too much attention is given to the reception rooms, and parlors, and dining rooms of our homes, and too little to the kitchen. Or, to speak more correctly, too much attention is given to the other rooms in proportion to that given to the kitchen—for too much attention can never be given to any department of the house. It is right and proper that the parlor should be luxurious, and the other rooms handsome and attractive in every way, that they should each and all be as tastefully, appropriately and expensively furnished as circumstances will permit. But it is wrong and unjust that they should be so, while the kitchen is gloomy, dingy and furnished in a mean and scanty manner. There is something radically defective in the social life of people when their parlors are furnished at a maximum outlay and their kitchens at a minimum expense. But this rule obtains so

universally among us that outside from the stove or range, ten dollars would be a munificent price to pay for the "cooking outfit," or entire furniture of any of a majority of the kitchens of even of our best society. I require a very limited number of utensils for giving a course of lessons in cooking. Yet in a class of from 75 to 150 ladies, I am seldom able to borrow the things that are almost indispensable to such work as will give satisfactory results. And in the leading hardware stores in cities of from 25,000 to 50,000 inhabitants I rarely find small sauce pans, wire skewers, boning knives, larding needles, or wooden spoons—articles that no intelligent cook can do without.

How many kitchens with which you are familiar are stocked with a complement of the most improved utensils for preparing food? How many are supplied with such griddles and gridirons, and stew pans, and boilers, and fryers, and steamers, and other articles as are best adapted to the needs of cooks? Or with such as they have occasion to use almost hourly? Do not the same decrepit utensils that have done duty from time immemorial still do duty in thousands of kitchens? And does not the same utensils—battered and dilapidated generally—render services in a dozen different characters and capacities in a majority of them? Is it not a fact that in many kitchens—owing to the scarcity of cooking utensils—the same pans that are used in baking fish and meats are also used for baking bread and puddings? I once knew a family who moved in the first society circles who invariably had potatoes boiled in the kettle. Is it not a fact that very few of our kitchens are furnished as they should be with an appropriate utensil for each culinary need? Is it not a fact that advantage is taken of the newest and best machinery, implements and utensils wherever the heads and hands of human beings are engaged in labor except in the kitchen? And is it not a fact that earnest efforts are being made to foster all our interests except our kitchen interests?

A look at the dark, underground kitchens, where the food served at many of the large hotels, restaurants and boarding houses is prepared, and at many private residences also, is enough to destroy one's appetite and take away all relish for even the daintiest and most savory dish. In a majority of cases they are wretchedly ventilated, and foul with air, vitiated by a combination of odors evolved by every product of the animal and vegetable kingdoms, in the various processes of preparation for the table. The bare suggestion of the uncleanness and unhealthfulness of food thoroughly saturated with such a noxious atmosphere is sufficient to nauseate a delicate stomach, without a chemical analysis or microscopic examination.

The difference between food prepared in pure air and food prepared in impure air is not appreciated by those who have never given the subject consideration. But it is so perceptible in the simple operation of mixing the dough that any one can be convinced by a single trial. Beat or stir briskly a batch of graham gems in a room where the air has been breathed and rebreathed until all the oxygen has been exhausted, and another batch in the open air or by an open window, and the difference in the lightness and quality when baked will be so apparent the most casual observer will have no difficulty in recognizing it. The difference is similar in every kind of food, though not so apparent in some kinds as others. Pure air is

essential to the preparation of pure food. It is impossible to prepare clean, wholesome food in an impure atmosphere. Poisonous gases, foul odors and infectious germs incorporated in food corrupt the blood and impregnate the system with disease as effectually and fatally as when floating in the atmosphere. And as the kitchen is the household laboratory, the department in which is prepared all the material for the body-building of the family, it should be one of the lightest, pleasantest, best ventilated and most conveniently arranged rooms in the house. Country kitchens, so far as air and sunshine are concerned, perhaps have the advantage of city kitchens; but in other respects they seldom outrank them. And, measured by a correct standard, only an infinitesimal proportion of the eight million kitchens in America would prove to be constructed scientifically, furnished adequately or cared for intelligently.

The amount of money expended in the United States for food material is greater than the amount expended for any other purpose. The number of persons employed in preparing food is greater than the number employed in any other single occupation. But the men and women who control our kitchens are so loth to put brains into their work and so slow to accept improved methods, that during the past hundred years there has been no perceptible advance in the art of cookery.

The theory that uneducated people are capable of preparing food properly is a delusion and a snare. It is grossly and stupidly untrue, and productive only of mischief. It is a theory that should be stamped out. Intellect, heart and conscience are needed in the kitchen. They are more essential there than in any other department of human industry. No parlor, sitting room or library can long fulfill its ideal unless the kitchen be properly thought of and cared for. The moral and intellectual, as well as the physical, character of a people depends largely upon the quality of the diet. Without good food there can be no wholesome growth in any direction. And the enlightened spirit of the nineteenth century demands a much higher order of cookery than exists at present. It demands an order of cookery that is intelligent, economical and healthful. Shall not that demand be heeded? And shall not our kitchen interests be lifted up, and placed upon a level with the other interests of our daily life?

There are three important considerations in breadmaking. First, the quality of the yeast; second, the temperature at which the bread is raised; and third the quality of the flour. Now I will tell you and you may all remember that 75 degrees is the proper temperature for fermenting bread. No bread sponge or dough should ever be shoved up close to a stove. It should be mixed at a temperature of 75 degrees, put in a bowl slightly warm, covered well with a bread towel and set to raise. If you use this proportion of yeast to wetting that the Vienna breadmakers use and which is the best proportion (like this dough I have been handling) in three hours is the approximate time it will be ready to mould. After moulding, it should be left to rise about an hour.

We abominate this setting of sponge over night in that foul atmosphere in the kitchen. You bread makers, if you notice, will find that the bread that is made on a bright, crisp day, when the sun is shining, is far better than that made on a cloudy day. When the dough is soft so that you can beat it, you should take it to

an open door or window and beat in as much pure oxygen as possible. Then you handle the light dough and you twist it into loaves or rolls, and when baked you have the genuine staff of life.

If bread dough stands fermenting longer than five hours it loses greatly in nutrition. I will venture to say that the bakers loaf that ferments more than ten hours has lost ten per cent. and probably 40 per cent. of its nutrition, and that is why you are just as hungry after eating one of those loaves of bread as before.

Ladies, you cannot make bread by the clock. Three hours is the approximate time to let it stand before moulding. If the flour is of a perfect quality, if the yeast is perfectly fresh and good, you mix the bread and hold it at a temperature of 75 degrees. Your flour should be of the very best quality, and the time may vary; it may take three hours and a half, and if the temperature be 80 degrees the dough may be perfectly light in two hours and a half. You might have good bread at 80 degrees and you might have it a temperature of 75 degrees, so you see that you must approximate the time and you must learn from the condition of the dough, just when the dough is perfectly light, and then you mold it into different shapes.

For immediate use roll it into French loaves, because by so doing physiologists tell you that new bread is rendered digestible on account of the abundance of crust. These loaves are small enough to be thoroughly baked. The way to tell whether bread is well baked or not is to press the end of your finger to the soft part, and if it flies back it is well baked. You can probably eat a fresh roll under these circumstances without having dyspepsia from it; but if, instead of resisting, the soft part retains the pressure, you would find a solid wad resembling putty. I beg of you do not eat it. It is just these horrible breakfast rolls that are like putty and a greased pole that are giving us a reputation of being a nation of dyspeptics. These abominable rolls that are just half baked, and the hot dough that people call biscuits are enough to give us that reputation. We would not care anything about it if it were not true; it is true and that is what makes it dreadful.

Now, I never knew a person to get dyspepsia from eating fresh bread of this sort. When you get hold of a piece of this bread I want you should all smell of it before you should eat it. It smells of nothing but the wheat; it is the sweet, nutty flavored wheat, and that shows the wheat nutrition of the flour has not been demoralized by imperfect or excessive fermentation.

It is said sometimes that men go into saloons to get a glass of beer to take the nasty taste of women's cooking out of their mouths; but under-baked bread is the worst thing a woman can give her husband or son, because the alcohol remains in it. While I was in the East a short time ago, the W. C. T. U. were holding a national convention in New York, and I was called to give them a lecture on neglected homes, especially to urge the necessity of leaving the wine and brandy out of the pudding sauces and mince pies, and I did. I told them they had no business to use a teaspoonful of wine or brandy in any of their cooking, and I also told them this: I want you to realize that in every loaf of half-baked bread you give your family there is more than a teaspoonful of alcohol.

In going through the country as I have been doing, giving lessons in cookery, I have heard and seen some very piteous things in my wandering. I remember

when I was in Chicago a little incident that struck me very forcibly. There was a young physician, a married man, who had a wife who was very fond of crocheting and ornamental work. One day she showed him a lovely thing to hitch up in the parlor, that she had just finished; he looked at it and said: "Darling, what lovely dinners I should have if they could only be crocheted."

Neither grease nor sugar should be used in making bread. Every particle of grease that is put into bread damages it because it clogs it.

The yeast to be used comes in small cakes weighing half an ounce and costing two cents a cake. It will take two of them to every quart of wetting for the best bread. Now, your bread will never smell or taste of yeast if your yeast be pure and you use it in large enough quantities. There is a great deal of prejudice against compressed yeast for some reason, from the fact, perhaps, that it has a very disagreeable odor, when it is kept in a warm place and kept too long, but I think any of you who have been accustomed to "milk emptyin's" and "salt risin's" should not complain of that. Compressed yeast will not keep in a dry or warm atmosphere. If you desire to keep any quantity of it on hand it should be put in a dry tin can and set on the ice, but in a city like Anderson you can get it fresh every day and if you find a cake that is soft and inferior you can return it. If there is a demand for it the manufacturers will furnish it to you fresh every day. Whenever a cake of compressed yeast breaks apart clean, I have found it good and reliable, no matter if it looked a little cloudy. It is good if it is brittle. When it deteriorates it softens and becomes stringy. A good many ladies think it is extravagant to mix two cents' worth of yeast in a quart of wetting. These ladies don't realize, I think, how many cents are wasted when the bread is poor. The only objection I ever heard raised by housekeepers against the way this bread is made was, that it seemed impossible to make enough. There will be no dried pieces left. It will all be consumed.

Now, ladies, you know the men started ahead of the women. I am sorry to confess that they have always kept in advance, but we are trying desperately to overtake them. But this is true. Women have not put principles into their work. Why? Because they have not been trying to do their work easily and well. I will not say any of these severe things to the ladies who come to my lecture. It is the average woman of whom I speak, and I am sorry to say that the average woman never comes to a cooking school—she is never there. They are always the best cooks, the best housekeepers, that go there, and they ought to set a grand example to the world.

THE ORCHARD AND FRUIT LOT

Were next presented in a brief speech by Dr. A. Furnas, President of the State Horticultural Society. He said:

The first thing to consider about the orchard is to think about the ground. It is almost nonsense for some people to plant orchards on the ground they have. I like a good situation. If a man has no good, dry, rolling ground, he should drain his land and make it good. I prefer a north or northwest location. I know in broaching this idea a good many people think differently, as they would prefer an

east or south slope. Now, the idea is this: The great cause of the misfortunes to our orchards is the rapid changes in temperature, and when we have had a cold night or a severe frost and the returning sun strikes the tree early in the morning, it makes a sudden change and causes great injury to that tree. If the orchard has a north or northwest location, the sun does not strike it so early and it thaws out more gradually. I would prepare the ground by thorough plowing, going over it at least twice, and if possible three times. The next thing is to stake off the ground.

Now, how shall we plant? If there are any mangled roots take a sharp knife and cut them off. Do not fear to cut the limbs off of a tree if the roots are scarce, for how can you expect a tree to grow with a big top and no roots to supply it?

Some people are always wanting to prune. Now, I think the best way is to say not to prune. I know there is more harm done by pruning than by not pruning. In my orchards some of the trees are pruned, some entirely too much, and some not at all. Use old soapsuds if you want to see the bark turn green and nice and all the lichens taken out. I believe in cultivating the tree, in raising something else on the ground where the tree is set the first time. Don't turn calves in the orchard for if you do you will watch them a little while and then forget, and the first thing you know the whole thing is eaten up. Did you ever see a rabbit eat a tree? I never did in my life, but I have seen trees eaten by them. You can prevent it by wrapping the trees with a newspaper. A good sized, ordinary daily journal tied to the bottom and run up as high as you can will do very well. When spring comes, takes it off. A little blood sprinkled on the trees will be very effective in keeping the rabbits off. I do not think it a good plan to turn the orchard into grass soon.

Some time ago I read that the trees in our old orchards were starved, and that was the reason we did not get as nice Bellflowers and Vandever apples as we did years ago. Two years ago I made up my mind to find out if that was true, and began to manure my old trees. I was astonished at the result, and propose to feed my trees hereafter. I believe I am going to raise as fine Bellflowers and Vandever Pippens as in old days. In the fall when I have the least to do is the best time to do the manuring. It should be made very thin, and if plowed at all should be plowed very shallow so as not to cut the feeders off.

DISCUSSION.

Mr. Roberts. How close would you plant the trees?

Dr. Furnas. I have been planting my trees thirty feet apart, but if I were going to plant a vandever pippin orchard I would plant them fifty feet apart. Some trees are upright and don't take as much room as that.

THURSDAY, DECEMBER 20.

MORNING SESSION.

The Institute was late in assembling for the forenoon session caused by the severity of the weather.

Prof. Carl L. Wulff, of Purdue University, presented the subject of "Milking and Tests of Milk," which he handled in a decidedly effective and interesting manner.

Prof. J. H. Smart, President of Purdue University, being present, was invited to address the institute.

PRESIDENT SMART'S ADDRESS.

Mr. President and Members of the Farmers' Institute:

I have a few things to say to you. The first one is that the State of Indiana is a good State, a first rate State. You take its situation, its soil, its possible products, and its people, and I think you may say Indiana is one of the best States in the Union. The second thing is that the people don't know it. If there is anything lacking in this State, it is a substantial, wholesome State pride. I came here twenty-five years ago, just as soon as I found out what a good State it was. We ought to be ashamed because we haven't a sufficient State pride. You take its progress in education shown by its newspapers, by its agricultural papers, etc., and you see that it is making far better progress than many of the States around it. Take its educational system. It is a glorious State that it has sense enough to plant schools all over the State. The greatest improvement being made to-day, as I understand it, is in its agricultural interests. Agricultural newspapers are published and read in the State, and the farmers wakening up to their interests. Why, we don't dare to put out a bulletin that is not scanned and scrutinized for errors or possible mistakes, because it is read by everyone in the State. If we haven't State pride we ought to get it as soon as possible or instill it into our children at least. I have no patience with those men who say, "we must go out of the State to get a good thing."

I wish to say a word specifically in regard to the enterprise with which I am connected. Although the law requires us to promote agricultural and mechanical arts equally, the government has made appropriations for the experiment station to the extent of \$15,000 annually.

We want your aid. We want you to come up there and find out what we are doing. It would please me just as much to have you criticise our work as to praise it. By so doing you would enable us to do better. It is our object to train young men and young women in such a way that they will not go into the law, medicine, or the ministry, that they will go out into the great work and enter into the common lives of the people.

So far as we are working on the agricultural system and making experiments, if the farmers don't come and help us out, I will say right here and now that we shall fail utterly. Our conclusions must be tested by practical men, our processes must be modified by practical men. We must be checked up.

What are we trying to do? How does Purdue differ from other schools of learning? It is a school of applied science. What is the difference? Well, in an ordinary school the children are being taught to think, and think largely the thoughts of other people, and thus they get into the believing habit, of accepting as truth your opinions and the opinions of other people; but when they go out into the world their every act is questioned, their faith is questioned, everything they do is questioned, everything they do is an interrogation point. We are training men, we are trying to discipline people. We can show them that knowledge is good, but the ability to apply knowledge better. If we are simply in the habit of believing them we are in the realm of danger. If we get into the habit of balancing and judging, then we are all right.

It is the method of instruction that secures thought in a school of applied science, as for example: If you say for a man to study a thing up in history and see what the historian says, he looks it up and brings you an answer, but he has not bestowed any thought upon it. But I want a machine made. Can the man do it without thinking and writing when he puts his thoughts on paper? When he brings it to me I am sure of accurate reasoning, that there has been the utmost accuracy in his plans. You must accept truth because it is said to be truth, but the application of knowledge is the great thing after all that trains a man in this world.

I believe there is a great place in this State in which we apply knowledge to a greater extent than other schools, and that is in Purdue University.

What we are going to do in our agricultural department is what interests you most. The Government has appropriated \$15,000 a year for our experiment station. We are very anxious to have a right start, and I want to appeal to you for help. We propose not to sell any new machines or appliances but to get out some truth that will help you as farmers in your work. What we want is your co-operation, but you must be patient. It takes time to get conclusions. We might sow fifty varieties of wheat, and at the end of the year tell you which variety has done so and so, and jump at a conclusion. That is all we could do at the end of at the end of the first year. That won't do. We can't tell about these varieties the first year. Why, sometimes we don't dare say anything about an experiment for twenty years. We will issue bulletins containing results of our experiments. You must not find fault with us if we make a mistake once in a while. We have been working in wheat chiefly. We are trying to buy seed all over the world and bring it to Purdue to experiment on. What results they will produce here we don't know. You can't spend less than a hundred dollars on each variety of wheat. We try them on the Purdue farm; we will tell you what the result is the first year, but that is not to be counted on. We will try it again and again until we find the wheat that stands all these various kinds of tests and is perfectly adapted to our climate.

We are studying various climatic influences, but we can't give you anything definite about it to-day, because we haven't been going long enough. By and by we will get at the facts, and they will perhaps be of great service to you.

We say when we find success that it is a great thing, but failure is a greater thing. Certainly we are doing good farming; that is, good experimental farming.

We are proving to you that certain seeds that are recommended every year are worthless, and more, we are saving you from \$50,000 to \$100,000 a year. We are just as happy when we get a dead failure, provided we can save you from one. The problem of farming to-day is believed to be to stop, arrest or prevent losses from the planting of bad seed, slovenly cultivation and the ravages of noxious insects. Why, the earth is so bountiful that every man, woman and child would be rich to-day if we could get out of nature what she provides. It is estimated at the Agricultural Department at Washington that five hundred millions of dollars are lost every year from insects' ravages. Suppose we could save that; why, there is the profit. Well, we have made some progress. Prof. Webster has gone to Australia. He was sent there by the government to import bugs—bugs that destroy other bugs. We hope they will do better than the English sparrow. Every animal in existence has its enemy. Every insect has an enemy; has its parasite. One of the best ways in the world to destroy insect pests is to breed parasites on them.

Prof. Webster and others have gone so far as to find out that they can import parasites. If we can get rid of the Hessian fly alone millions upon millions will be saved. We believe that we are on the trail of the Hessian fly. We can get rid of them pretty certainly if we watch them.

We have another man who is studying plant diseases, the physiology of the plants, how they grow, and trying to get something of permanent value. He is finding remedies for the potato rot, peach yellow, and such things as that.

We will issue bulletins just as fast as we can, and send them to every man in the State upon application. We want encouragement, hearty coöperation and criticism, but don't be too hard on us, because we don't know everything. If the farmers would come to Purdue and see for themselves we could get more out of you there than we get by seeing you here. We want the ladies to come. If you will appoint delegations to come up there and see what we are doing we will be very glad of it. The soil in this State is depreciating five per cent. a year. I take this from scientific reports. If your soil deteriorates from three to five per cent. annually, it will soon make your State poor. The Legislature ought to be wakened up to see what is to be done to help us out. The State Horticultural Society don't get five cents a month to carry on its great work. Forty years ago Prussia waked up and found its people were getting poorer and poorer. They established 175 experimental stations in Prussia, and the result is to-day Prussia produces more than twice as much as she did forty years ago.

AFTERNOON SESSION.

The first topic on the programme for the afternoon was an address by D. L. Thomas, President National Swine Breeders' Association, on the subject of

THE FARMER'S RELATION TO SWINE BREEDING.

This question that has been assigned to me is one that opens up a vast field for thought and reflection. It is one that I have studied a great deal, probably

more than any other branch of farming, and the greatest difficulty I find in undertaking to discuss it is to decide just what I ought to say. I have always had a love for the management of hogs. A natural liking for it from childhood up has led me probably to study it much more closely than I would have done otherwise. It is my purpose now to throw out ideas that will suggest thoughts to you, so that you will go on and think of this subject.

Now there are some things that we will all admit. I suppose that any farmer, as a general thing, would admit that mixed husbandry is the best, but of course there are exceptions to all general rules. But if you have given this matter thought you are convinced that mixed husbandry, diversified agriculture is the province of the American farmer; that it will not do for him to rely upon one particular branch of agriculture. Then when we come to look at the question in this light, live stock raising upon the farm is essential, that is, no farmer can, as a rule, make great success in farming without live stock. You will observe that from your own experience.

There is no class of live stock, probably, that has been more beneficial to the American farmer than the rearing of hogs. I know there are times when men get carried away, but when it comes down to reading and studying the history of the American farmer, it will be found that there has been more money in raising hogs than any other stock.

If it was not for hog cholera we would get along. Of course that is natural. I want to tell you farmers that are present to-day why hog cholera has been such a terrible scourge, and I want to say to you that there is not half the danger in it that the farmers generally suppose there is. There is danger, I admit; but I want to say to you that in the great majority of cases where hog cholera exists, the man that rears those hogs is responsible for it himself. Everything is changed. We are not at a stand-still. It would be a sorry state of affairs if we were. There is a spirit of change going on—I might term it evolution. Do we keep pace with our business? Do we study hog raising? Do we study how to take care of them? Do we try to find out the best methods of preventing disease? I say we do not. I don't pretend to say that we will ever be exempt from hog cholera, but I do say if we will take proper care of our hogs we can prevent it to a considerable extent. My hogs had it but once and I was to blame for it that time. There is no breed of hogs in existence that is exempt from cholera, no matter what advertisers say to the contrary. Some people say, "If we could just set Indiana back forty or fifty years the hogs would be all right;" but they would die of cholera just the same. However, if we use the proper care we will not have the disease to the extent there is now. Why, all of our own diseases come from some cause or other; there is a violation of the laws of health somewhere and somehow, and so it is when it comes to raising hogs. The owner will detect cholera as soon as he goes among his hogs. We must endeavor to supply them with the wants of nature and not try to keep them on one kind of food. The man that will keep his stock on one kind of food for three or six months ought to have an attack of cholera among his hogs, and nature will punish him in the end.

There is a rendering tank in my town, and I go to that often particularly to find out about hog cholera. Sometimes there are lots of hogs stacked up in the

factory, and they will cut them up for me whenever I desire it. Sometime ago the proprietor mentioned to me something that I suspect will come to pass, and which would not surprise me a particle, and that is that there will be a similar outbreak among the cattle of this country; that they will have the same disease that hogs have. This proprietor told me that the condition of the animal was the same—that the flesh would sting the palm of the hand in handling it. If it will sting the palm of the hand that is hardened, why wouldn't it produce death in the animal? In a few years we will have what is called cattle cholera. Why is it that we don't study these things? The food must be changed. You farmers will find you will make more money out of your straw by stacking it in the field and allowing your stock to run to it than by selling it in the market. I wish you to study that and see whether there is any economy in it or not.

As regards the disease being contagious. You don't know when or how hog cholera comes. I took a pig that was some four or five months old, a healthy pig, and put him in a cage which was set in a room full of dead cholera hogs at the rendering tank, and it was kept there for half an hour, and that pig remained healthy until he was slaughtered, two years afterward. I was willing to lose the pig for the sake of finding out about it.

Every man here will admit that it is profitable to raise hogs, but if I should ask every farmer here who has carefully estimated what it costs him to raise a hog to hold up his hand, there would be only a few hands raised. We will say that it is money-making, and it is, doubtless, but do you know it to be an absolute certainty? Did you ever calculate what it costs to raise a pig for market? Suppose some of these factories should run their business that way. Would they not soon fail? We raise all kinds of stock and don't know what it costs us, and men will count so much money made—that is, when they raise a hog and sell it and have ten dollars, they think they have made so much money, and never estimate the cost of raising it. It costs me \$7.50 a head to raise my hogs till fall. I count now on keeping the brood stock over winter.

Hog raising brings the quickest returns. Commercial men always have the quickest returns in view in all their transactions. We ought to have that kind of hog that is valuable on account of its early maturing qualities. The hog that matures the quickest upon the least food is certainly the best and most profitable to raise.

I think farmers make a mistake in the line of breeding. So many farmers say: "I won't pay ten or fifteen dollars for a pig well-bred when I can buy one for five dollars in the market." But I have thought for years that such a practice is suicidal. You had better raise the best. It may cost you something more to get started, but the results will be more profitable in the end.

In my judgment the man makes a mistake who is not careful in breeding. It is hard for a farmer to pay too much for good breeding stock. He seldom ever does. Don't depend on your neighbors for breeding stock, but invest some money of your own for breeding purposes, and I am sure you will take better care of your stock. If you have never tried it go and pay out ten cents a pound for breeding purposes, and you will feel that you have got some money in that pig and take

care of it. If you depend on your neighbors you will be apt to think "oh, well, it hasn't cost me much anyhow," and you will throw out the corn in a general way and not care much about it.

There are a great many farmers who never see their hogs for weeks and weeks, unless it is on Sunday. And in the summer, when they are out on clover eating one kind of food with nothing to drink (for the one branch in the field goes dry), the farmer will say: "Well, I must go out over the farm. I see some buzzards flying around over that field and I shouldn't be surprised if some of my hogs were dead."

Let me say in conclusion that there is money in hog raising, taking one year after another, and if you will study your business closely and provide for the wants of nature, you will not engage in anything that will pay you better. The more we study details, the greater success we will attain to in every department of agriculture.

DISCUSSION.

Mr. Bronnenberg. I would like for you to tell how to prevent hog cholera.

Mr. Thomas. I will say this, there is no absolute cure or specific. These nostrums are humbugs. I have no faith in any of them. There is no cure for it. You may take ever so good care of your hogs, there will be times when cholera will drop down in your herds and you will never know how it got there.

Dr. Furnas. I have but one remedy for everything, and that is apples. I sold eleven head of hogs about two weeks ago, and they were two hundred and forty days old and averaged 280 pounds to the head. I fed corn six weeks and allowed them to run in the orchard and eat all the apples they wanted.

I want to ask if any farmer here has had cholera among his hogs when he allowed them to run in the orchard. (One man had.) I never had but one man tell me that before. I am getting too old for universal remedies, but the nearest universal preventative is just to let your hogs have apples all the time. It seems to furnish the necessary acid to keep them healthy. I never lost any hogs in my life until last year. It does not injure the orchard.

Mr. Billingsby. I think the greatest success lies in the line of special farming, and brother Thomas here is an illustration of that principle. He has studied the hog and made a success of it.

Mr. Theodore Lewis, of Wisconsin has never had cholera on his place. Whenever he buys hogs he quarantines them first a distance from his farm to make sure there is no disease among them. He breeds only from mature animals and then keeps his brood sows until they are six, seven or eight years old. That is worthy of consideration by all farmers. The breeding stock must be mature from the first and then kept as long as profitable.

Mr. J. J. Billingsby read an interesting paper on "Farm Drainage," as did, also, W. H. Lawrence, on "Floriculture."

RESOLUTIONS.

The following resolutions were reported by the committee and adopted :

Resolved, That the sincere thanks of this institute are due to Hon. R. M. Lockhart, of Dekalb county, for the able, efficient and satisfactory administration of the duties of the presiding officer, and we commend him to farmers' clubs and similar societies throughout the State as a practical and successful Institute worker and manager.

That we recognize in Purdue University an institution which is meeting in a high degree the wants of the people for a popular school of applied science; that the University should have the cordial co-operation and support of the farming community in the development of agriculture and all related interests; and further that we invoke from the State Legislature such generous appropriations for Purdue as shall at once place it in the front rank in point of equipment for the great work which it is doing.

That Farmers' Institutes, as they have been conducted in this county and throughout the State, are accomplishing much good in acquainting farmers and horticulturists with new and advanced methods of cultivating the soil, stock raising and the growing of fruits; and we therefore petition the State Legislature to make an adequate appropriation for meeting the necessary expenses of Institute work, to the end that the same may be encouraged and developed in all sections of the country.

That this Institute acknowledges its indebtedness to Granville Cowing, Mr. D. L. Thomas, Hon. John B. Conner, Dr. A. Furnas, Mr. W. H. Lawrence, Prof. Carl L. Wulff, Prof. Emma P. Ewing, J. W. Billingsby and Hon. J. H. Smart, for their able addresses, essays, and valuable instruction.

That our thanks are due the several newspapers of the county for the kindly and active assistance which they have given in furthering the interests of the Institute.

Adjourned.

WOMAN'S WORK.

MRS. IDA A. HARPER, TERRE HAUTE.*

Apologies are seldom in good taste, but it is only just to myself to say that through an unavoidable circumstance my name was printed upon the programme of this meeting before I was requested to prepare the paper. On account of this short notice I accepted the invitation very reluctantly, and only because, in behalf of the women of Indiana, I wished to express our appreciation of the fraternal spirit shown by the State Board of Agriculture, the only one in the Union which extends this courtesy to women. The time has been too limited and too much occupied to permit the collection of such statistical information as would render this paper of especial value; but upon this fact the audience is perhaps to be congratulated. Statistics are of great importance, because, it is claimed, "figures will not lie," and in these days of political campaigns mathematics may be said to have a monopoly of this virtue; and yet it must be admitted that like exceedingly good people they are apt to be stupid. The writer or speaker should fortify himself with statistics and then make his assertions, holding his figures as a reserve force, to be brought forward only when the accuracy of his statements is questioned; for while statistics may increase the force of an argument, they are likely to diminish the size of an audience.

Forty years ago the writer who had assigned to him the subject "Woman's Work," would have had an easy task, for at that time there were only five occupations open to women by which they could earn a living—housekeeping, sewing, teaching, type setting and factory work. There are no records to show how many women were engaged in these industries, but the number was very small. He who prepared a paper on this topic forty years ago would have had only to refer to these five occupations to exhort women to be duly thankful for the great privileges they enjoyed, and to admonish them not to attempt to overstep these boundaries and get beyond their sphere. I say "he" because in that day no organization would have dreamed of inviting a woman to address them upon any subject, not even that of "work," with which women have always been well acquainted. Sermons were preached upon the awful consequences that would follow "when women should stand unbonneted and unshawled upon the public platform." When Lucretia Mott and her grand army of co-workers began to speak against the great and growing evil of slavery, the "Association of Orthodox Churches of Massachusetts" issued a circular, warning religious people "not to countenance any of that sex who so far forgot themselves as to itinerate in the character of public lecturers and teachers." Forty years ago the woman who would enter a State House and address a body of men would have been socially ostracised and publicly ridiculed and condemned. How can we ever be sufficiently thankful that

*Read before the Annual Agricultural Convention, January 8, 1889.

we are not our grandmothers? To-day, with the exception of a few orthodox pulpits, every platform in the land is open to women, where they are free and welcome to express their opinions and lead the warfare against ignorance, prejudice and conservatism; and around these women stands a brave army of noble and enlightened men, ready to protect and defend them in their struggle for equal rights and absolute justice.

Until within the last ten years women "cut no figure" in the report of the Statistician. They were of numerical value chiefly because each counts for one in the apportionment of Congressmen. In all other political matters husband and wife together only count as one, and the husband is that one. Of late years, however, women have become so important a factor in the industrial world that they have reached the dignity of being listed, classified, tabulated, compared, aggregated, recapitulated and pigeon-holed. The first attempt at obtaining accurate statistics regarding women's occupations in the State of Indiana was made in 1881. That year the head of the statistical bureau sent to each town and County Commissioner certain sets of questions relative to the occupations of women. In some instances they were not answered at all. One Commissioner replied: "The women in our county are mostly engaged in baby-tending." This response was considered extremely witty and was extensively copied by the press. From the best information that can be obtained there are at present in this state nearly 60,000 women engaged in money-making industries, and there are about 55 different occupations represented. Very careful statistics have been taken in Massachusetts, New York and a number of other States, showing that the women of this country are engaged in about 300 different occupations. In Massachusetts there are 250,000 women earning a living outside of home; in New York State nearly 300,000. According to best estimates there are in the United States about 3,000,000 women engaged in wage-earning industries. We must base our calculations upon statistics collected from five to eight years ago, and so rapidly are women entering industrial fields that these figures must fall below the actual number of working women. It must also be borne in mind that, while every man is registered as having some occupation, the millions of women who work within their own homes for their own families are not classified as wage-earners.

Therefore, when we consider the question of "woman's work" we regard only the 3,000,000 who are recognized by the statistics of labor. The first thought that strikes us is, Who fed and clothed and cared for these women before they were permitted to care for themselves? We see that, with all the advantages they have at the present, many of them find it a hard struggle to secure the bare necessities of life. How was this done when men only were the bread-winners? We can scarcely imagine the hardships that would follow were these 3,000,000 women suddenly deprived of the opportunities for supporting themselves. The second question that arises is, Why should any man wish to put an obstacle in the way of woman's industrial progress, when every woman who earns her own living relieves some man of that responsibility? The competition in business which women create cannot reduce the profits of men's labor as much as would the support of these 3,000,000 women. Then comes another question: Is it right that women should have

to maintain themselves? In some instances, yes. If a girl is as able to work as her brother there is no reason why she should not do it. A healthy, capable, grown-up girl ought not depend upon her father and brothers for support. If, however, they prefer to take care of her, she does herself a great injustice to permit it. It places her in a position of dependence, it leaves her without any occupation or ambition, and it compels her to look to marriage as the only object in life. Girls are happier and more contented to have some paying pursuit. If they marry they make better wives for having had a business training and learned the value of money; if they never marry they are independent and self-respecting, and are not made to feel that their life is a failure and they are an unwelcome burden on family or friends. Married women should not be compelled to make a living. The woman who accepts wifehood and motherhood, with all their attendant duties and cares, should never be required to go outside of the home to earn a livelihood. To properly manage a household, to bring up children conscientiously, to be a careful and helpful wife, to fulfill the usual obligations to church and society, this is all that should be required of a married woman. If, through any shortcoming on the part of the husband, she is compelled to add his duties to her own, he is greatly to be blamed and she is sincerely to be pitied. It is claimed that wives are sometimes dissatisfied and insist upon doing outside work for money when it is not necessary. These cases will be much less frequent when husbands are just enough to make the wife an equal partner in the joint earnings, with equal authority in the management of the money.

No matter what may be our theories in regard to "Woman's Work," we are confronted by the condition of three million already at work, and the number yearly increasing. While there is great cause for rejoicing that the field of woman's opportunities is growing broader, and that her labors are yielding a harvest, yet a close investigation reveals an appalling state of affairs. In considering this, however, we must not lose sight of the fact that although now women are earning a miserably small amount, formerly they earned nothing. The developments in New York, Boston, Chicago, and every city where research has been made in relation to work and wages of women, put Christianity to shame and make philanthropy a by-word. Hon. Carroll D. Wright, Chief of the Mass. Nat. Bureau of Labor Statistics, states that the average weekly earnings of the working women of Boston are \$4.91. The average yearly income from all sources is \$269.07, the positive necessities are \$261.30, leaving \$7.77 as a margin for all other expenses during the year. Hundreds of women work sixteen hours a day for these wages. and 85 per cent. are compelled to do their own housework and sewing besides. Hon. Chas. F. Peck, Labor Commissioner for New York, reports even a worse state of affairs, showing that many women in New York City work for 12 cents a day. He is supported by Mr. Blake, Superintendent of Charities and Corrections, in the statement that 50 cents for a day consisting of 15 hours, is the average pay for the tenement sewing women of that city. The disclosures now being made by the Chicago Times are familiar to all. The cruelties and outrages practiced upon the working women of large cities have no parallel in the history of African slavery. While, for obvious reasons, the inhumanity is not so great in smaller cities, yet

among working women everywhere will be found many instances of injustice and oppression and indignities greater than are practiced upon the convicts in the penitentiary.

The improvement of the condition of the laboring man is one of the great questions before the country, and yet how infinitely better it already is than the condition of the laboring woman. What, then, must be done for the relief of the women wage-earners? It has been suggested that homes should be founded by benevolent persons in which these girls can live cheaply and respectably. This is very good as far as it goes, but it always seems necessary to surround these "Homes" with so many restrictions that they are only one remove from the House of Correction. By living there the "inmates," as they are always called, must advertise their poverty, while if they were paid for their work as a man is paid, they could select their own abiding place. The second suggestion is that public sentiment should be educated to look upon all kinds of labor as respectable. Labor is already looked upon as quite respectable in this country, and the woman who works is held in greater esteem than the one who is idle and dependent; and yet this does not seem to increase the wages. There is no way in which labor can be made so quickly and so surely respectable as by commanding good prices and enabling the laborer to live comfortably, dress well, educate his family and accumulate property. It is not the labor in the abstract, but the results of that labor which compel respect. The third suggestion is that women should be better trained so that they may reach the dignity of skilled labor. This is indeed important and necessary. Women, as a rule, are sadly lacking in a thorough training for any occupation. They depend too much upon having their faults overlooked because they are women. They do not take up their work in youth with the intention of making it the business of a lifetime. They are always looking for that possible husband who is coming sometime to take them out of this life of toil into one of ease. It must, however, be remembered that only in the last few years have the industrial schools been open to girls; that even now their opportunities for thorough and systematic preparation are exceedingly limited; and that in this new field of action all is so different from anything women have ever known before that we can not expect them to reach at once the skillfulness men have been generations in attaining. But all this does not explain why women who are trained and do the same work equally as well as men, for example in the schools and in government positions, in almost every instance have to accept smaller wages than do men. Nor does it explain why women in all departments of unskilled labor are compelled to take from 25 per cent. to 50 per cent. less wages than unskilled men receive. We have not yet struck at the root of the question.

A fourth suggestion is, that these matters are entirely regulated by demand and supply. If this is the case, does not the principle apply to men as well as women? There are always a large number of men out of employment, ready to step into vacant places at lower wages, and yet we do not hear of men being compelled to work for 12 cents or 50 cents a day. But the reply is, "Men are banded into organizations to protect each other." Ah, now, perhaps, we are approaching a solution of this question. Women must form trades unions to regulate wages. But, if they form such organizations and become strong, what is to hinder their under-bidding

men, reducing the scale of prices and monopolizing all kinds of work which they are able to perform? To prevent this, men must ultimately admit women on equal terms into their own federations. This being done, the organizations will have gained greatly in numbers, but will they have increased correspondingly in strength? In other words will an organization composed of 25,000 men and 25,000 women be as powerful as one composed of 50,000 men?

To decide this we must first determine wherein lies the strength of these vast bodies of laboring men. It was repeatedly admitted during the past six months that the workingmen held the balance of power in the United States. Was it meant by this that they could rise in revolution and destroy the possessions of capital? Was it assumed that they could at will paralyze the vast and varied industries of the country? Or that they could defy the law and the statutes? Not at all. It was simply meant that they held in their control the balance of political power; that they were able to put into office men who would legislate in the interest of the working class. Civil service, the pension laws, the fisheries, the southern question received but a small share of attention in the late campaign. The main point at issue was the tariff and it was discussed almost entirely with reference to its effects upon the workingmen. The first aim with every candidate was to secure the support of the labor organizations by whatever pledges they desired, and nine-tenths of all the speeches made and editorials written were addressed directly to the laboring men. The whole nation was convulsed over the charge that one of the candidates had said, "a dollar a day was enough for a workingman," but nobody was stirred with indignation over the fact that thousands of women actually are working for 50 cents a day. Every member of all parties was eager to fight the battle of the workingmen. Where was the champion of the working women? The contest is over. The labor organizations are in a position to make their demands and have them recognized. Does the party stand committed by a single pledge to advance the interests of working women? Women had nothing to give, they have nothing to expect. For this reason they can add no strength to organizations of men.

The workingman is a power because he possesses the ballot. Can any one dispute this assertion? Take away his vote, and all the federations of labor combined could not give him the influence and position he now possesses. Does not this prove by every process of reasoning that the first and most essential need of the working woman is the franchise? Her interests are identical with those of the workingman; they must be protected in the same manner. If Woman's Work is to be lifted to a higher standard, if it is to receive a recognition according to its value, if she is to occupy a respectable and influential position in the industrial world, if her wages are to be regulated by the scale of man's labor—she must be clothed with the dignity of citizenship and invested with the authority of the ballot.

HOW CAN THE SOIL BE MOST PROFITABLY CULTIVATED.

BY JOHN Q. A. SEIG.

This is a question as old as agriculture itself. Men have been working at this problem ever since the creation of man, and yet they differ as much in opinion now as they did when Cain and Abel were the only leaders in agriculture. Then one thought the raising of cereals and fruit was the thing to do, the other thought stock raising was best, hence they divided, and murder followed on account of jealousy and difference of opinion as to the best mode of farming. Now, if two men living in the same locality, with the same market, could not agree as to the best mode of farming, how can we expect the millions of farmers of to-day, living under such a variety of circumstances and in so many different localities to agree? This is a question every farmer in his own locality will have to determine for himself. But there are

SOME GENERAL PRINCIPLES

Underlying this problem that hold good in every locality, and unless some attention is given to these general features the farmer will in a few years fail to farm profitably. One of the greatest of these general principles is the retention of the fertility of the soil; this is the crowning idea of successful farming. The banker who is continually drawing on his principal soon finds his doors closed; and if when he draws on his principal he puts it into merchandise or speculation he soon finds whatever he has left, if he has anything, transferred into other channels, and his bank a thing of the past. So it is with farming, it does not matter where situated or what is grown upon the farm, if by the mode pursued there is a constant drain upon the soil and nothing replaced, it is only a question of time, and usually a very short time, when such a farmer will be farming without profit. Therefore the true idea is, as with the bank, to so manage as to keep the principal inviolate, and then if there is a surplus to put it where it will do the most good. Now how to do this is not a question that can be solved by the exercise of the muscle or manual labor; but it is a

QUESTION FOR THOUGHT

And deep consideration; for the man that fails to think in this day and age of the world, on the farm, is lost in the fog; his farm soon passes into other and more intelligent hands and he becomes a day laborer, and frequently an object of charity; for a man who has inherited a farm and fails is the most pitiable of all failures, he being entirely unsuited for any of the other avocations of life. Therefore, this proposition in every locality holds good, that in order to farm profitably the

fertility of the soil must be retained; even better, that it should be increased. To do this we will have to look elsewhere than to barn-yard manures, for no farmer can begin to make enough of this best of all fertilizers to supply the drain on his soil caused by the constant growing of crops. Farmers used to think that fallowing and cropping alternate years was the thing to do, but to-day all posted farmers know that if there never had been a fallow in the State of Indiana the farms would be more productive, and that

NOTHING SO INJURES THE SOIL

As laying bare without any protection from the heat of the sun in the months of July and August. This being the case, there should be such a rotation of crops adopted as to insure shade and protection to the soil during the heated part of the season; say the following rotation: Clover—I begin with clover, because I think any rotation without clover a failure. I turn under in September or October and plant to corn in spring. The reasons I would turn under in these months are: You put under plenty of seed for future seeding, and you also get rid of the cut-worm in the spring, which is frequently worth a great deal in a single crop. Let your corn get pretty well matured. By this means you get much better corn and better fodder. Then cut it up. If your corn has been well cultivated, cut one way with a Stoddard's harrow, cross with a good steel-tooth harrow, then drill in one and one-half bushels of wheat, with 200 pounds of phosphate or bone meal—which ever does the best on your land—to the acre. By managing this way you will find in the spring that you have

A BETTER STAND OF CLOVER,

And it will stand the summer drouth better than if seeded by hand in the spring, and without any extra expense. Mow or pasture first year. Better mow. Let grow second year and turn under as before for corn, and so on. The farmer that will follow up this plan will not only retain the fertility of his soil, but he will find that land that brought 10 bushels of wheat and 20 bushels of corn to the acre will in a few years produce 30 bushels of wheat and 50 bushels of corn to the acre. You also by this mode keep your land at good, profitable work, and not wasting its energies in the production of weeds, which are more injurious to the soil than the cultivation and growing of crops. In planting and sowing it is very necessary to have and use the best and most vigorous seeds. No one has any idea how much is lost to the farmers each year by using imperfect and weakly seed. It can only be guessed at by comparing it with the loss sustained by the breeding of poorly fed, feeble and ill-formed animals. Therefore, the second great principle in successful farming is to

PRODUCE THE BEST OF ITS KIND

of everything you raise. If your farm is not rich enough in plant food to produce the very best of grain or produce, feed it until it will produce the best. It will not be money thrown away. It will be depositing it where cashiers can not run away with it, nor where you will have to take a mortgage to secure the payment of it, but it will be there subject to come forth at your intelligent command,

The soil, in order to respond profitably, must be thoroughly, systematically and economically cultivated. A good warm mellow seed bed is just as necessary as a fertile soil for the remunerative production of a crop. It never has nor never will pay to plant seed among the clods to be starved in the start. For, like everything else, the young plant needs to be nursed and fed with the choicest of plant food when it is young. Therefore it is necessary to so pulverize the soil as to make it light and compact. Shut out the cold winds, for plants suffer more from cold feet than most any other one thing, and put it in such a condition as to furnish plenty of food from the start. For plants, like animals, if well fed suffer but little from the cold. Now how to do this, and do it economically, is that to which the average farmer gives too little attention. While his hands are busy his mind is not working out the economic problem.

HE PLOWS WITHOUT THINKING

until the field is plowed. Then, when the hands are done, the mind says you must plant, but the soil has become so dry and cloddy that there is not sufficient fine soil with which to cover the grain. Then the mind says to him, you must pulverize. He sends one hand with a team and roller; he goes with another team and harrow bumping and thumping all day over the clods, and at night all the way he can tell that he has been doing anything is by the jaded condition of his teams and by the feeling that he has, tired and sore, that he has been stumbling over clods the livelong day to no purpose or advantage. Now, the mind should have worked in the first place as well as the hands. It should have told him that at night they should have rolled and harrowed all the soil that had been plowed during the day. To have managed economically he should have had his harrow and roller in the field ready, the harrow hitched or fastened behind to the roller. Then at the proper time he should have hitched both teams to the roller, mounted his hand and let him do the work of both, while he went and gave such attention to things about the house as they might need. To do all this successfully you must

SECURE INTELLIGENT AND INTERESTED ASSISTANCE.

The ordinary farm hand cares but little what the results from his labor amount to. It is but little to him whether it is 10 bushels of wheat or 30 bushels per acre. If any difference he would rather see the 10, for then there would not be so much to handle and less labor to perform.

Then the question arises, what are we farmers to do? Our boys are leaving us, and we are getting old and unable to work, and we must have labor on the farm and consequently have to take such as we can get. I would suggest that the boys on the farm be taken into partnership; that they be made interested partners in all that is done or undertaken; that they be consulted in every matter of importance. Give their brains plenty of work to do. Show them that it requires more intelligence to farm successfully than it does for almost any other vocation. Help them to surround themselves with such labor-saving machinery as will

DEVELOP BRAIN AS WELL AS MUSCLE.

Give them to see that out of the soil, well managed, they can produce almost any living thing necessary for man's comfort. And above all, if your boy wants a dollar don't have him come begging for it like a tramp or a pauper. But what he needs let him take, feeling that he is like the partner that he is or should be. In this way make him feel all the responsibility of the situation. For this is the crowning joy of a boy's life. They want to shoulder responsibility and know that somebody trusts them.

Then again the wife, the mother, the one above every other we can so illy afford to leave out of the partnership, is so generally ignorant of what is going on on the farm. How often I have called at a farm house and asked what the man of the house was doing. The answer from the lady of the house would be: "Well, I don't know. He went off this morning and I have not seen him since. He hardly ever tells me where he is going or what he is doing." Shame on such a man. If you had taken as little interest in telling her what you was and what you intended doing when you were courting her you never would have won her. If it was necessary then to tell her all about yourself when you were two, how much more necessary and sensible it is after she becomes the mother of your children and is so interested in the success of your every undertaking that she should not only be made a confidant, but should be consulted in all matters pertaining to what you are, what you have and what you intend to do.

In conclusion, if you have so farmed as not only to retain, but to increase the fertility of the soil, have made good and intelligent farmers of your boys, such as will be an honor to their profession and a comfort to their parents; if you have made the wife, the companion of your youth, your happy partner and confidant; if by your example you have been the means of improving the condition of farming in your community, you have not lived in vain, and your soil has been very profitably cultivated.

HOW TO SECURE BETTER RESULTS IN FARMING.

HON. W. B. SEWARD, BLOOMINGTON, IND.*

The topic for discussion is, "How to Secure Better Results in Farming." It would afford me pleasure to give you a complete and satisfactory answer to this great question, if I could. The question is such a large one, has a bearing in so many different directions, that I could not hope in the short time I shall occupy, to follow all these various directions, even if I knew them, which I am certain I do not, so I feel at liberty to take any one of the roads that seems to lead in the direction we wish to go, that happens to suit my fancy.

An old English cook book in giving direction how to cook a rabbit, started out by saying first procure the rabbit.

Now my first and main receipt for how to secure better results in farming, is to first procure a farmer. The man or woman who succeeds in any business, must thoroughly understand that business, and be fully satisfied to follow it.

If a man follows the plow only to get a little money so that he can move to town and set up a corner grocery, you may depend upon it that he will never be a successful farmer, for the reason that his heart is not in the business. He has other aims in life and will not give the devotion to the business necessary to success. The man who follows farming, or any other business, and makes a success of it, must put his whole heart and soul in the business. There must be no reservation, mental or otherwise, that so soon as he accumulates a certain amount he will abandon farming for some other calling. He must be in love with his business and think only of how he can improve his mode of cultivation, and some day be the model farmer, owning the model farm in his neighborhood. It is a pride worthy of any man to strive to be a model farmer, owning a model farm. How many have we who are working with this end in view, and striving to dignify and honor the business of farming.

It is an unfortunate fact that we have many unsuccessful farmers, as well as many unsuccessful men in all other avocations, and that the fault is oftener with the men than the business. It should be distinctly understood that it is not the business that makes the man, but the man that makes the business. This rule must never be lost sight of if we expect to succeed in any of our business efforts. Some persons will make a grand success, where others under similar circumstances make an entire failure.

Some years ago, I knew a farmer who owned a good farm, which he received as a portion with his wife. He was raised on a farm, and had never attempted any other business. He had a "hired" man working for \$20 per month. Time wore on, and after some ten years, the hired man owned the farm, had money in bank, and the farmer owned nothing. In this case one had a capacity for business, the other had not, and so according to that invariable and unchanging law that the fittest shall survive, the one without capacity had to give way.

* Delivered before the Marion County Agricultural Society.

Then, to succeed, we must first procure a farmer. He must be a real farmer, fully imbued with the dignity and nobility of the calling, and willing to endure the hardships incident to the business for the pleasure and profit it will bring him. When you have a man of this kind, he will make a success of the business, because it is his business and aim in life to make the business a success. He has gain and pride as an incentive to extra exertion. He wants to be the model farmer owning the model farm in his neighborhood, and I glory in his pride and spunk. It is a worthy pride, and if more farmers were filled chuck full of it, we would have a better supply of successful farmers.

There are many who try the business of farming that fail even with their best efforts, but this is no fault of the business, it is for lack of capacity on the part of those making the trial. It is not every one that has the brains, industry and economy to make a successful farmer, yet this is no reason why the business may not be highly successful to those that have the capacity to manage it. Many will try in the future, as in the past, and fail, but we can shift this class off and let them become lawyers and politicians, and if they fail again, it is no harm to the country, as we don't depend upon them for anything, any way. But a failure in farming, while but a small loss to each individual farmer, is a calamity to our country, and it is this broad, patriotic view that we should take of the subject. What it pays this man or that man as an individual to follow the business of farming is of little moment compared to the wholesale interest our country has in successful farming. Our nation's wealth and prosperity hinges so largely on successful farming, that vast sums of money are now being directed by our National as well as State governments for a more thorough education in the various branches of husbandry, and from this source must come in the near future, results that will prove the wisdom of devoting time and money from the public treasury for the promulgation of knowledge on a subject of such vital interest to us as a nation.

But knowledge and education if not intelligently and industriously applied, is of no value. The measure of success or failure in any business, may be accurately determined by the amount of brains and industry used in conducting the business. This is a rule without an exception in every business, and to none does it apply with more force than to farming. The same care, devotion and economy, that makes a manufacturer succeed in business will make a farmer succeed also.

It was popularly supposed in times past by many, and by some at the present time, and perhaps not without a shade of truth behind it, that farmers are slow, plodding, ignorant beings, that consent to live for a time that they may bear the burdens of their betters, and then considerately die to make room for others of the same kind. We may have had too many of this kind of farmers in times past, but they are rapidly becoming things of the past. Universal education is producing a revolution in the ranks of this class where they exist, and is the lever that is elevating the farmer to a proper knowledge of the importance and dignity of his calling.

(On the floor above our heads are one hundred gentlemen, gathered from all parts of our State to legislate for us. It is a fair average body of men, for legislators, and equal, perhaps, in point of education and intelligence to any Legislature we have ever had. The same week the Legislature convened there was a meeting

in this room of the delegate State Board of Agriculture, gentlemen gathered from all parts of our State as is the Legislature. Each gathering consisted of about the same number of men. I took a look at both bodies of men, heard speeches from each, looked them all square in the face, and applied every rule of measurement within my knowledge to try to determine fairly and honestly as I would in awarding a premium, which was the most intelligent, best educated and progressive body of men, and I say to you frankly that I was unable to decide the matter. In no respect could I see that the Legislature was superior to the body of men meeting in this room, that were selected almost wholly from farmers. This is not an insidious comparison, and is only made to show the progress of education, and illustrate the fact that we now have farmers in all parts of our State capable of successfully managing a farm, or a State Legislature if need be, and in fact part of those making up the meeting in this room spoken of were members elect of the present Legislature, and many others were ex-members. The delegate State Board of Agriculture is made up of representative farmers in their respective neighborhoods, and are enthusiastic enough and successful enough in the management of their business to spare the time and the money to attend meetings like that one and this one to-day, with the hope of learning something that will help to secure better results in farming.

It is by this class of men that we are to be taught how to secure better results in farming. They are all teachers, as well as students, and all candidates for model farmers. Now, the model farmer is no more like the ignorant, plodding being that we heard of than is the poorest scrub cow to the finest specimen of blooded stock ever seen. One of the first and most important lessons learned by the model farmer is nature's law of compensation. He is too liberal in soul after he has become a model farmer to expect something for nothing. You will never hear him grumbling at nature and claiming that we are all going to starve because he can't count eggs by the dozen year in and year out from the same basket and never put any eggs in the basket. He recognizes the fact that nature don't work this way, and that he is powerless to change nature's laws of compensation, and would certainly make a great botch of it, even if he could; so he adapts himself and his business to these unchanging laws as he finds them. The model farmer does not expect to take tons of wheat, corn, hay, etc., from a field and pay that field nothing for it. He may have tried before he became a model farmer to work the field on credit, merely giving it a promise that if prices for its products are good and taxes not too high, that by and by he will pay something to the field that has been so liberal with him, but the field won't work this way, as it does not do a credit business. It pays promptly, with double compound interest, for all that is deposited with it, but the little it asks in return for all that it gives must be promptly paid.

Now, to sum the whole matter up as to how to secure better results in farming, I would say that we must have first-class, industrious, economical, educated men in the business, the same as in any other business that succeeds. A man in becoming a model farmer has mastered all the details of plowing, rotation of crops, use of fertilizers, under drainage, and hundreds of other details that are useful.

FOREST AND DROUGHTS.*

BY DANIEL BERRY, M. D.

A few years ago the systematic work of the United States signal service bureau established the fact that to the southwestward from the great lakes was a wide area of low barometric pressure which was persistent for several months in each year—notably during the spring and summer. This area has been called the great barometric trough of low pressure. It is in the form of an ellipse, and is about 600 miles long by 400 miles wide. This area is subject to a great many frightful atmospheric disturbances, known as tornadoes, and to occasional periods of long-continued drought. It does not create these tornadoes, but furnishes a grand field for their action after they are started on their career from other points. It is the object of this paper to inquire as to whether these conditions can be modified and to indicate what appears to me to be the

SOLUTION OF THE PROBLEM.

But first we must note that this ocean or atmosphere is impelled in all its movements by identically the same force that moves the ocean of water, namely, gravity. All our atmospheric movements are simply adjustments of equilibrium. To appreciate how these movements occur, we have only to study the analagous movements of water currents. Water runs down hill. The air does exactly the same thing. As streams of water flow down from the mountains into the valley in well defined channels, just so do the atmospheric currents move down from areas of high pressure, and are guided by the configuration of the lands over which they flow. This is the simple problem, but it is generally rendered complex by the intervention of other factors. The States of Indiana, Illinois, Iowa, Missouri and Eastern Kansas, when considered in relation to sea level, occupy a very low position. Any disturbance of the atmosphere above them, from whatever cause, either from shifting up by sun heat or a movement to supply the needs of other regions southeastward of us over the Atlantic, would naturally lead to a flow of air from the higher lands westward of us. The rapidity and volume of this reinforcing stream will depend on two causes: First the declivity of the hill down which it comes and the size of the space to be filled up. We can measure this descent, which has two elements, one of altitude and another of pressure. We can also measure the space to be filled—the barometer shows this without fail.

* Delivered before the last Forestry Congress in Springfield, Ill.

IN THIS LOCALITY

Whenever we have an area of low pressure—which is nearly constant in the months of May, June and July—we must expect the equilibrium to be restored by an in-rush of air from the plains to the southwest and west, which lie about 5,000 feet above us. At other seasons of the year, or during the fall and winter months, when the area of low barometer is southeast of us, over the Atlantic, the reinforcing currents will be from the northwestern high plateaus. When we look for the cause of this great barometric trough of low pressure, we find it due to two causes: The nearness of the great lakes and the natural consequence of the sun's heat upon them; and second, to the added fact of immense cultivation. There is no spot on the globe that presents as many consecutive square miles of ploughed land as this barometric trough. During the tornado period a bird's-eye view of the area would show thousands and thousands of square miles of ploughed land prepared for corn, or only sparsely covered with oats or wheat; there is no vegetation to fix the sun's heat in permanent forms, and as a consequence this heat runs riot and rampant in the atmosphere. By reason of its reflection and radiation from the water-soaked ground and lake surface, it lifts vast columns of vapor laden, heated air, that tend away to the northeast, to part with their vapor and dissipate their heat, thus following the general law of all super-heated streams of air and water, the world over, to flow away from the equator, only to return to it by well established ways as colder streams. To preserve the equilibrium or to restore the lost balance caused by this uplift, a demand is made on the atmosphere of adjacent regions.

But why is it that the country lying to the south and west mainly supplies this demand? It is from the fact that during the prevalence of this barometric trough the atmospheric currents supplying the region come mainly from the south, being set in motion over the Gulf of Mexico by just such mechanism as prevails over the great lakes; and these currents from the south are reinforced by other currents from the great plains westward, giving a resultant in the southwest winds. These causes are too complicated and intricate to be dwelt on in this paper. Our interest is mainly with the westward factor in the problem. To fully appreciate this we must get a substantial understanding of the physics and characteristics of the western atmosphere generally.

This subject was presented in such a terse and concise manner by Capt. Silas Bent, of St. Louis, in a paper read by him before the Cattle Growers' Convention, held at St. Louis in 1884, that I can not do better than to quote it. He said in substance:

The western winds, dry and cold from the Steppes of Asia, in their passage to North America over the Kuro Simo or equatorial current of the Pacific, take up an immense amount of heat and moisture, reaching our shores saturated with vapor. They find an inlet to the land when the Cascade range breaks down. Flowing eastward they let down their moisture on the dome of the continent and furnish the water supply of our whole system of majestic lakes and rivers. But a different fate befalls those winds that enter the country south of Oregon. Here they are thrown against the western flanks of the Sierra Nevada, where they are robbed of their moisture, and thus descend, cold and dry, on the plateaus of Utah

and Arizona. In this condition they move eastward, with just sufficient moisture to answer the needs of the vegetation on the slopes and to whiten the crest of the Rocky Mountains. After this total depletion they reach the plains of Colorado and New Mexico. In this condition of dryness, but with their heat being constantly augmented by radiation from the parched plains, they keep on their movement eastward.

Now, if you will notice, this barometric trough of low pressure, covering the States of Western Indiana, Illinois, Southern Wisconsin, Eastern Iowa, Missouri and Eastern Kansas, is not much more than at

GOOD DRAINAGE HEIGHT

Above sea level, and is very low when compared with the plains westward, that tower 4,000 and 5,000 feet above it. When this fact is fully appreciated, in conjunction with a knowledge of the physical law that, like water, the air never moves until a way is opened for it and a demand made on it by gravity, we can easily see how the air from the western plains will pour down into this barometric trough to equalize the pressure. The data gathered so far is not sufficient to warrant the conclusion that the prolific cause of our tornadoes during May and June is the inrush of these western cold, dry currents to the partial vacuum of the barometric trough, yet we have enough data on which to ground such an assumption. But when we come to consider the effect of these winds in the midsummer months, when, in their passage over the arid plains, they have changed their character from cold and dry to hot and dry, we stand on surer ground. We know that when these winds join with the vapor-laden air currents from the south four effects are produced:

First. A change of direction of the combined currents from south and west to the northeast.

Second. A diffusion of the vapor borne on the southern current among the hungry air from the west.

Third. A general lifting of the combined currents by the great increase of heat from the western current.

Fourth. This increase of heat gives the combined current a firmer grip on its moisture, and, floating higher, as we have seen, enables it to carry this moisture further to the northeast, causing excessive drouths along its route.

Is there any way to change this condition?

There is a remedy, simple and practicable, but, from the nature of the case, immense in its application, and to succeed must depend wholly on the intelligent, comprehensive co-operation of the States interested. These western winds must be tempered with moisture. But how? We have seen that their natural base of supply for moisture is the Pacific Ocean; that in their passage eastward they leave a great amount of this moisture, in the shape of snow-fall, along the crests of the Rocky Mountains. This snow-fall must be utilized for irrigating purposes along the eastern slopes of these mountains. This is

THE PLAN OF ATTACK

on the western side of the arid region. The instrumentality on the eastern side must be the plough, advancing westward from the humid areas. I think there is now no question but that the steady advance of agriculture toward the southwest, in Kansas, during the past ten years, has projected the rail belt in the same directions.

Under the old conditions of prairie sod the rainfall found an immediate passage into the drainage channels, leaving little or nothing to be returned to the atmosphere. Under the new conditions of pulverization the soil is converted into an immense surface reservoir for the retention of the rainfall. I believe that this problem of temporizing these western winds with moisture will, in time, be solved by the exigencies of our civilization by systematic field and forest culture, but it can be hastened by intelligent inter-state action. Let me show you what private enterprise is doing in Colorado. A company has tapped the Platte river in the river canyon and by boring through a mountain brings the stream out on a high plateau of arable lands. The supply canal for these lands is about 80 miles long and is calculated to furnish water for 200,000 acres of ground. Under the old condition the surface of the Platte exposed for evaporation for this distance was not much over three square miles. This plan gives it an evaporating surface equal to nearly 200 square miles. But we must measure its evaporating capacity by the area of the land that is irrigated.

A more just approximation would be reached by calculating the combined superficies of the leafage that the land sustains. The plant roots appropriate the water, and the leaves give it to the air around them. So that we see in this the fact that an irrigating ditch not only waters the ground, but practically pours that same water indirectly into the atmosphere if that ground be cultivated. It will readily be seen how every enterprise of this kind brings about a modifying influence tending to laden the atmosphere with vapor. The facilities for extending this work are as yet barely comprehended.

Of one thing we may rest assured, the future of those States and Territories along the eastern slopes of the Rocky mountains will see to it that not a drop of available water or snow fall will be allowed to go to waste. There are thousands of places along these eastern slopes, in the narrow-mouthed gorges and canyons, where retaining dams can be built that will hold back the water from the melting snows in permanent lakes that shall form vast reservoirs available for purposes of irrigation. The cost of such dams should be slight compared with the wonderful results that would be accomplished. These results are not alone the climatic condition to be affected eastward, but are more far-reaching.

When you reflect that all the devastating inundations of the Missouri and Mississippi rivers are mainly caused by the melting snows among the eastern slopes of the Rocky Mountains, perhaps you will believe with me, that if all the money that has been expended on the levee system of the Lower Mississippi had been spent in building retaining dams to hold back this water from the snow fall, we would have a Mississippi controllable without levees, and regular showers on the

arid plains; and you may also gather what I mean when I speak of intelligent, comprehensive inter-state action in the premises. But rest assured that it is only by such means as is here indicated that forest growth on the plains can be secured, and you can only hope to map out the general plan. The details

MUST BE LEFT TO EXPERIENCE.

You gentlemen of the Forestry Congress must realize to its fullest extent this fact. Your labor and deliberations, your educations and deliverances will avail you nothing until the people shall have become generally enlightened as to the principles on which your work is based.

Intelligent coöperation among the States such as alone will accomplish your end must first be prompted by the people at large. This is as it should be and is in accordance with the genius of our government. But you must first educate the individual into the belief and practice of this maxim: "Thou shalt not benefit thyself at the expense of thy neighbor." And further, a conservative, business-like interest for the general good in carrying out provisions when it shall be said: "The wilderness and the solitary place shall be glad for them, and the desert shall rejoice and blossom as the rose." He must be led to see that in the grand economy of nature there are no waste places, that he cannot tamper with those he considers such without positive injury to more highly-favored regions.

It is necessary that such a sympathetic spirit may be created and fostered as will lead men in different parts of the country to see and feel that their interests are most intimately commingled and dove-tailed together. For instance, when the farmer of Wisconsin or Northern Illinois reads of a two or three years' drought in Texas he must be taught to see that he has a direct interest in that fact, and that it closely concerns him. If this farmer is too old to learn, then teach his child the fundamental principles of atmospheric law. First, tell it what the father already knows by experience, that nearly all the rainfall necessary to give him an abundant harvest comes on the vapor-laden air currents from the southward; show him that these air currents carry moisture in direct proportion to the heat they bear; explain to him how these currents traveling northward freighted with blessing for him are liable to be influenced by two very potent causes that affect his weal or woe; that when they pass over the arid regions of Texas their heat is augmented by radiation from the parched earth, and by this means they take a firmer grip on their moisture, float higher and carry their burdens farther to the north, or, being reinforced by the westward winds, hot and dry from the plains, their moisture is diffused in that hungry atmosphere, and the combined currents carry it to indefinite distances northeastward. Again, show him that he can not have something out of nothing; that the highway robbery plan of taking from the forest, the field and the air all their benefits, giving nothing in exchange, is pernicious in every respect; that here, as everywhere else, "honesty is the best policy."

Once let the Northern Illinois farmer understand that, under normal conditions, these vapor-laden air currents from the south spill out their moisture in local or general showers many times along their route, passing onward to recoup

their water by evaporation from the earth along their pathway, and that under the old conditions of marsh and wet lands they found plenty of it; but now, when thousands of square miles of these same lands have been ditched and drained with tile, the air goes on hungry and impoverished for lack of vapor, and with no promise of refreshing showers for the waiting lands along its course. When he realizes this fact he may be led to see that perhaps it would be good policy for the State to own and control those waste places, and keep them as such for the general good. And, perhaps, seeing this he might be willing that the grand State of Illinois should take some steps to act in concert with other States in an attempt to mitigate the hot, dry winds from the west by pouring into them moisture through the agency of belts of timber trees, even if the State did have to spend some money to keep the trees alive by boring a few artesian wells.

HEALTHY HOMES.

The following is taken from special papers on health topics written for the Rural Home by Dr. Felix L. Oswald :

Professor Virchow, in a treatise on the progress of sanitary reform, remarks that in a civilized country every incorporated town ought to have a municipal hospital of its own. For similar reasons every well arranged family residence ought to have a special sick room. Contagion propagates numberless disorders which are frequently ascribed to quite different causes. Chronic catarrhs, for instance, are more frequent in winter than in summer only because cold weather enforces indoor life, and thus favors the spread of pulmonary disease germs. The common practice of keeping a sick-bed in a family bed-room frequently becomes the means of communicating whooping-cough, measles, scarlatina, etc., from one to half a dozen members of the household.

SICK-ROOM MANAGEMENT.

A bed-room in a quiet, airy country house is the best possible sanitarium, but the natural advantages of such homes are too often spoiled by the consequences of the popular fallacy that insists on keeping the atmosphere of a sick room at a high temperature and excluding every draught of fresh air. There are but few disorders of the human organism that are not seriously aggravated in that way. Cool climates enjoy a well-known immunity from a number of contagious diseases. Cholera, cholera-morbus, gastritis, sick headaches, colic, are all more malignant in summer than in winter. By confining a patient in a sweltering bed-room the recovery from febrile affections is often as effectually retarded as if we had tried to assist the development of the disease germs by the use of the most approved fertilizers. "Hot-beds of Fever" would be the right name for the sweat-boxes of our old-fashioned parish hospitals. A Swiss medical journal mentions the case of a young emigrant who came to some town on the lower Mississippi, and a week after his arrival was seized with the premonitory symptoms of yellow fever. In the local hospital his friends secured him the aid of the best medical experts, but he would have given all their prescriptions for a good drink of cold water. His bed-room was intolerably hot, and his nurse shrieked out an instant protest whenever he made an attempt to open a window, and limited his beverages to half-pint doses of weak, warm tea. He felt his life ebb away in sweat and delirium, but during one of his lucid intervals his nurse was called out by one of the medical attendants, and seizing the lucky chance he jumped out of bed and made a rush for a cupboard, where he knew she kept a large pitcher full of ice water, which he drained to the last drop. The discovery of the atrocity filled the house with wails, and his nurse offered to bet that he would not get a chance for a week to repeat that trick; but she lost her wager, for that night the fever left him, and during

the next week he kept a negro boy busy refilling the water cooler of his private boarding house. There is no doubt, hardly, that the life of the late scientist, Prof. Richard Proctor, was sacrificed to the hot, sick-room superstition. According to the opinion of the best specialists his disorder was not yellow fever at all, but a sick headache complicated by slight febrile symptoms, brought on by a long trip in a hot, stuffy sleeping car. He was on his way to London via New York, and if his ship had left on the day of his arrival at the New York depot, a cool sea breeze would have remedied the whole trouble in a few hours, but a luckless coincidence of warm weather and stove heat soon aggravated his fever to a fatal degree. Lord Byron owed his untimely fate to a similar mistake. By order of his fatuous physician his sick-room, at Missolonghi, was kept night and day at a bake-oven heat, which, in combination with bleedings and sudorific drugs, at last exhausted the vital resources of a constitution that had resisted the summer heat of southern Spain and the snow storms of the Balkan highlands.

SICK BEDS.

Frost is an antiseptic, and every breath of cold air helps to prevent the development of disease germs, though at the same time the body should be kept comfortably warm, and as invalids and weakly children have but limited resources of animal heat, the deficiency has to be made up by warmer bed-clothes, but the face should always be kept uncovered. As we have seen in a former chapter, the best remedy for sleeplessness—a remedy as effective as any narcotic drug, and far less baneful in its after effects—is to reduce the repletion of the cerebral blood vessels by keeping the head cool and the feet warm. In very cold weather the latter problem can be solved by means of warming bottles, small stoneware, jugs with a tight-fitting stopper and filled with warm water, which, under the cover of the bedclothes, keeps its temperature for a surprisingly long time. In winter time many people must have noticed how difficult it is to go to sleep again after the feet, by incidental exposure, etc., have once become thoroughly chilled, and the hero of the nursery rhyme "Who went to bed with his breeches on," would not have been far wrong in Upper Canada, where the lumbermen have found it the best plan to sleep in foot-sacks—woolen or fur bags, that admit both feet at once, and reach up to the knees, or even to the hips. The superintendent of a female seminary was much amused at the receipt of a letter entreating her to prevent a certain young lady from "relapsing into the evil habit of wearing her stockings in bed;" but in many cases that habit is not nearly as unphysiological as the custom of wearing night caps. Night caps and head shawls for infants should be banished from the sick rooms of the temperate zone, excepting, perhaps, the far northwest of our national territory, where winter storms deserve their name of "polar waves."

NIGHT FIRES.

There is no doubt, however, that north of the Tennessee river bed-room fires sometimes become indispensable—for the nurse's, if not for the patient's sake, and in such cases open fire-places, with their ventilatory advantages, are far preferable to heating stoves. The danger from flying sparks can be obviated by a common

wire screen. The sick-bed, however, should always occupy the corner furthest from the fire; and the South European superstition that it is unlucky to engage a sick-nurse for trifling ailments, may have a logical origin in the circumstance that the vigils of such attendants are generally cheered by the glow of a red-hot stove, which in the course of a few nights may aggravate the patient's headache into a brain fever. If there was any hope of compromising the prejudice of the night air superstition, I should even advise the plan of moving the sick-bed to the next neighborhood of an open window, and let the nurse enjoy her stove behind a double screen, though in homes blessed with an abundance of spare bed-rooms the difficulty can be obviated by putting patients and nurses into separate, but adjoining rooms, divided only by a board wall with a glass door. Otherwise patients will get their best chances of sleep after midnight, when their nurse begins to nod in her arm chair, and fires are apt to burn low. For similar reasons the victims of insomnia often enjoy a good, long nap if a sultry night is cooled by a sudden change of wind, and many of my readers must have shared the experience of an invalid friend of mine who once told me that he owed his best sleep to heavy snow storms. "We never use a night-lamp," said he, "and I can't get my folks to keep a window open after sundown, but if a drizzling rain suddenly turns into a blizzard that buries the streets in snow, I can tell it even in the darkest nights by a feeling of pleasant drowsiness, that would let me sleep till noon, if it was not for the clatter of the snow shovels."

COMMERCIAL FERTILIZERS.

H. A. HUSTON, STATE CHEMIST, LAFAYETTE, IND.

The value of a commercial fertilizer depends upon the nitrogen, phosphoric acid, and potash which it contains, for these are the essential plant foods that are most rapidly removed from the soil and which must be provided by the artificial fertilizer.

The condition in which these substances exist in the fertilizer is of much importance; they should be in such a condition that they may be readily taken up by the plant and used for its food.

NITROGEN.

This is the most valuable of the plant foods and the one of which the soil is generally most readily exhausted. The plant is constantly surrounded by an atmosphere consisting of more than three-fourths free nitrogen, but the latest researches indicate that none of this nitrogen is directly available as plant food, and the total amount of nitrogen supplied from the small amounts of combined nitrogen existing in the air and brought to an acre of land by rain and snow in a year is not more than one-tenth of that required by the average crop. Hence in time the soil becomes exhausted of a large part of its available nitrogen and it must be supplied in fertilizers.

The most common sources of nitrogen are :

Nitrate of soda,

Sulphate of ammonia,

Guanos,

Organic nitrogen in bones, fish scrap, slaughter house waste, dried blood, cotton seed meal, seed pomace, and other vegetable or animal refuse rich in nitrogen.

PHOSPHORIC ACID.

This is a substance second only to nitrogen in value as a plant food. It exists in the soil in such condition that it is not readily dissolved in water, and hence there is much less loss by drainage than is the case with the nitrogen compounds. The loss is the amount removed by the crops. While there are numerous sources from which phosphates can be obtained, nearly all the phosphoric acid sold in the State is obtained from ground bone or from bone black. Of fifty-seven brands of fertilizers legally on the market in Indiana during the year 1888, twenty-seven samples were ground bone, and it is estimated that forty-six hundred and fifty tons of ground bone were sold in the State last year. In the remaining thirty brands

of fertilizers a part of the phosphoric acid had been rendered more available for plant food by treatment with sulphuric acid. The effect of this treatment with acid is to make a part or all of the phosphoric acid soluble in water. But after the fertilizer has been applied to the soil, or after standing, much of the phosphoric acid assumes the "reverted" form in which it is no longer soluble in water but is still nearly if not quite as valuable for plant food. The *available phosphoric acid* then is the sum of the soluble and reverted contained in the fertilizer. If, as is usually the case, a smaller amount of sulphuric acid is added than is necessary to convert all of the phosphates into a readily available form, some remain as insoluble phosphoric acid. This is not at once useful for plant food, but may become so after remaining in the soil for some time.

POTASH.

This is a substance required in relatively large quantities by all plants, although all kinds of crops do not require the same amount of it. Most of the common compounds of potash are readily soluble in water, and hence there is loss by drainage, as well as by removal of crops. It is especially needed on light, sandy soils.

The potash in the soil comes from the decomposition of insoluble minerals containing it. The most important of these are feldspars, which contain from ten to sixteen per cent. of potash. These decompose slowly, forming clay and leaving the potash in a soluble form. Most clayey soils contain considerable feldspar, and hence are capable of slowly supplying potash. The commercial forms of potash supplied in fertilizers are the sulphate and chloride.

The chloride is the cheaper variety, but it is not suitable for all crops. For example, experiments show that it ought not to be used in raising potatoes.* The sulphate is applicable to all crops. Wood ashes contain considerable potash, and the ashes of corn cobs sometimes contain as much as forty per cent. of it. It is also contained in smaller proportions in seed pomace.

THE STATE FERTILIZER LAW.

In 1881 the Legislature passed a law relating to fertilizers. This law is given in full in the Appendix. While there are good points in the law there is room for considerable improvement. No plan of inspection is provided and no provision is made for the chemical work necessary to enforce section 4897.

The State Chemist has repeatedly called attention to these defects, but the law remains unchanged. It is but fair to state that the distinguished chemist who became the first State Chemist of Indiana, Dr. H. W. Wiley, under this law, knew nothing of the provisions of the law until after the adjournment of the Legislature that passed it.

*The result being a "soggy" tuber of inferior food value.

The State Chemist has inspected several brands of goods on the market, and those so inspected have been found to agree with the analysis of sample furnished by the manufacturer. This work of inspection will be carried on to as great an extent as the facilities of the laboratory will permit.

We have reason to believe that the law forbidding the sale of fertilizers without the label of the State Chemist, is evaded in the southern part of the State, and the matter will be investigated at the proper season. It is the duty of the County Prosecutors to see that the law is enforced.

EXPLANATION OF THE TABLES OF ANALYSES.

These contain the analyses of all goods legally on the Indiana market during the past year. The samples numbered from 249 to 288 were analyzed during the year, while those from 102 to 242 were analyzed in previous years. The tables contain an "estimated value per ton." It is important to note what is intended by this. No attempt is made to state the agricultural value of the fertilizer, or the return which the farmer may expect from a given quantity of any sample. This agricultural value would depend on many varying conditions, such as the crop to be raised, the composition of the soil, the condition of the soil at the time of applying the fertilizer, the time of application, the amount of rainfall, the drainage, the care taken of the crop, and other conditions.

The "estimated value per ton" is intended to mean the *commercial* value, that is, the sum for which a ton of the sample could be made and put upon the market. The figures are only approximate and are probably rather above the selling price of the goods. In computing these valuations the following values were given to the various ingredients:

Soluble Phosphoric Acid	10c. per pound.
Reverted " "	9c. " "
Insoluble " "	4c. " "
Ammonia	15c. " "
Potassium Oxide	5c. " "

These valuations are useful to the farmer in deciding between different samples of goods offered to him.

In order to find the estimated value per ton the following simple rules may be observed:

Multiply \$2.00 by the per cent. of soluble phosphoric acid.					
"	1.80	"	"	reverted	" "
"	.80	"	"	insoluble	" "
"	3.00	"	"	ammonia	" "
"	1.00	"	"	potash	" "

Add together the numbers so obtained and the sum is the estimated commercial value of a ton of the goods. For example the tag shows that a fertilizer contains:

Soluble Phosphoric Acid	2.70%
Reverted " "	5.37%
Insoluble " "	2.66%
Ammonia	3.76%
Potash.	2.46%

\$2.00 × 2.70	\$5.40
1.80 × 5.37	9.67
.80 × 2.66	2.13
3.00 × 3.76	11.28
1.00 × 2.46	2.46

Estimated value per ton \$30.94

In purchasing fertilizers the farmer should keep in mind the crop to be raised and the kind of land on which it is to be grown. If the crop is one requiring a large amount of potash, as the tobacco crop, then goods should be selected containing a large amount of this ingredient. If his land contained a fair amount of phosphoric acid, little or no benefit could be expected from the application of a fertilizer containing much phosphoric acid and a small amount of ammonia and potash. The investigation of the needs of a given soil can only be made by experiment, and the Station is prepared to give directions for such experiments to those who desire it.

Farmers are advised to buy only such goods as bear the State Chemist's analysis. Persons selling goods that are not so labeled are committing an offence against the laws of the State. The label indicates that the manufacturer has made an affidavit that the goods are as represented.

Experience in other States has shown that the reputable manufacturers and dealers are willing to conform to the laws, and that when goods are offered for sale without the official or legal label they are of an inferior quality. It is generally those who offer adulterated goods who do not wish the quality of their goods to be known.

It is estimated that 10,000 tons of fertilizers were legally sold in the State during the past year. The estimated commercial value of this is \$340,000. Nearly one-half of the material sold was ground bone. It is interesting to notice that more potash is contained in the goods sold than formerly. In the years 1884 to 1886 thirty-two per cent. of the samples contained potash, in 1887 fifty-three per cent., and in 1888 sixty-five per cent contained potash. Still the total amount of potash furnished in commercial fertilizers during 1888 was only 72 tons, or only about one five-hundredth of that removed in crops. Three hundred and fourteen tons of nitrogen were sold, and seventeen hundred and twenty-one tons of phosphoric acid. This is about one-twentieth of the amount removed by crops. In case crops are consumed on the farm most of the plant food finds its way back to

the soil, but the amount of phosphoric acid and nitrogen supplied in fertilizers is probably less than the amount of these materials in the grain that is exported from the State, and it is certain that the potash supplied is far less than is exported.

This means that the soils of the State are becoming reduced in fertility, and that a time is coming when much greater quantities of potash must be supplied.

Experiments conducted here during the past ten years indicate that our naturally rich soils become exhausted more rapidly than it was formerly supposed that they would.

Of the ten thousand tons of commercial fertilizers sold during the year 1888, twenty-one hundred and fifty tons were manufactured in the State, and seventy-eight hundred and fifty tons were imported.

TABLE I.

Analyses of Fertilizers Sold During the Year 1888.

Number.	NAME OF FERTILIZER.	MANUFACTURER.	Per Cent. Solu- ble Phosphoric Acid.	Per Cent. Revert- ed Phosphoric Acid.	Per Cent. Insol- uble Phosphoric Acid.	Per Cent. of Total Phosphoric Acid.	Per Cent. of Am- monia.	Per Cent. Potash, Soluble in Water.	
249	Bone Flour*.	Globe Fertilizer Co., Louisville.	0.00	9.98	16.22	26.20	4.12	0.00	\$43.30
250	Corn Fertilizer	R. B. Brown Oil Co., St. Louis.	5.72	2.39	0.28	8.39	4.47	0.72	30.09
251	Garden City Superphosphate.	N. W. Fertilizing Co., Chicago.	4.61	4.44	5.30	14.35	3.41	1.75	38.53
252	National Bone Dust.	N. W. Fertilizing Co., Chicago.	4.18	5.40	4.46	14.04	3.48	1.62	34.79
253	Fine Raw Bone	N. W. Fertilizing Co., Chicago.	0.00	7.09	16.12	23.21	4.75	0.00	59.91
254	\$26 Phosphate.	N. W. Fertilizing Co., Chicago.	4.62	3.80	5.05	13.47	2.43	0.00	27.41
255	Prairie Phosphate*	N. W. Fertilizing Co., Chicago.	4.49	4.20	5.08	13.77	2.40	0.00	27.90
256	Ralston's Bone Meal*	N. W. Fertilizing Co., Chicago.	0.27	6.50	7.85	14.62	2.80	0.00	26.92
257	Globe Superphos. & Corn Grower.	Globe Fertilizer Co., Louisville.	4.85	5.46	2.96	13.27	5.48	1.70	40.03
258	Eagle Fertilizer	Globe Fertilizer Co., Louisville.	4.38	3.18	4.43	11.99	3.65	1.74	30.71
259	Central Che	Central Che	0.00	12.11	14.06	26.17	2.52	0.61	41.20
260	G. F. Brun	G. F. Brun	0.18	9.98	6.58	16.61	2.53	0.00	30.93
261	J. S. Wilson	J. S. Wilson	0.00	7.49	17.18	24.67	4.38	0.00	40.40
262	J. S. Wilson	J. S. Wilson	0.00	8.34	16.81	25.15	3.65	0.00	39.40
263	Jarvis Drill Phosphate.	Michigan C.	6.84	2.94	3.03	12.81	1.83	0.00	26.82
264	Homestead Corn & Wheat Grower.	Michigan Carbon Works, Detroit.	7.46	2.06	0.81	10.35	2.99	1.71	30.09
265	Homestead Desiccated Bone*	Michigan Carbon Works, Detroit.	0.00	4.77	20.93	25.70	3.12	0.00	34.62
266	Globe Wheat Grower.	Globe Fertilizer Co., Louisville.	3.75	3.55	6.21	12.51	4.16	2.59	33.13
267	Pure Raw Bone Meal*	Globe Fertilizer Co., Louisville.	0.00	3.67	17.96	21.63	4.57	0.00	34.68
268	Standard Bone Meal	Globe Fertilizer Co., Louisville.	0.28	4.66	13.68	18.64	4.10	3.24	35.46

*No tag issued.

269	Raw Bone Meal	P. B. Mathiason & Co., St. Louis	0.00	8.55	13.97	22.52	4.04	0.00	38.89	289
270	Globe Bone Meal	Globe Fertilizer Co., Louisville	0.00	5.11	16.69	21.80	4.51	0.00	38.07	270
271	Standard St. Louis Fine Raw Bone	New Albany	0.00	5.42	15.97	21.09	4.51	0.00	38.92	271
272	Armour's Pig Foot Bone	New Albany	0.00	6.09	20.16	26.25	3.18	0.00	38.62	272
273	Raw Bone Meal	St. & Glue Works	0.00	3.74	18.12	21.86	4.44	0.00	34.54	273
274	Bone Flour	Madison, Ind., Fer. & Glue Works	0.00	6.51	12.24	18.75	4.77	0.00	35.82	274
275	Farmer's Favorite Phosphate	E. Raub & Sons, Indianapolis	0.61	8.46	5.09	14.16	3.75	1.11	32.88	275
276	Pure Raw Bone Meal	Miller Fertilizer Works, Louisville	0.00	3.15	18.00	21.15	4.51	0.00	33.60	276
277	Globe Wheat Fertilizer	R. B. Brown Oil Co., St. Louis	4.13	1.35	0.15	5.63	5.77	0.39	28.57	277
278	Ammoniated Dissolved Bone	J. McCallum & Co., Dayton, Ohio	1.43	4.74	4.55	10.72	3.18	7.29	31.86	278
279	Valley City Wheat Grower	Madison, Ind., Fer. & Glue Works	0.79	5.02	8.21	14.02	3.61	1.77	29.79	279
280	Valley City Phosphate	Madison, Ind., Fer. & Glue Works	2.09	4.09	5.33	11.51	2.64	1.62	25.34	280
281	Gilead Phosphate	Cincinnati Desiccating Co., Cincinnati	2.70	5.37	2.86	10.73	3.78	2.46	30.94	281
282	Tobacco Fertilizer	Cincinnati Desiccating Co., Cincinnati	4.53	5.88	2.25	12.46	4.72	6.08	41.32	282
283	Ohio Valley Phosphate	Cincinnati Desiccating Co., Cincinnati	0.84	8.60	1.69	11.13	2.03	1.86	26.46	283
284	Sweepstake Phosphate	Loudenback & Co., Westville, Ohio	1.71	4.35	4.32	10.38	2.18	2.90	24.15	284
285	Pure Ammoniated Bone Meal	Loudenback & Co., Westville, Ohio	4.03	1.90	3.06	8.99	2.92	3.55	26.22	285
286	Farmer's Favorite Phosphate	Loudenback & Co., Westville, Ohio	4.23	3.76	3.81	11.80	2.51	2.53	28.34	286
287	St. Louis Bone Meal	W. Brown & Sons, New Albany	0.00	4.32	17.17	21.44	3.80	0.00	31.51	287
288	Rockport Fertilizer	Milner & Adams, Rockport	2.71	6.76	1.69	11.16	1.05	0.12	22.21	288
102	Buffalo Raw Bone	A. B. Mayer & Sons, Indianapolis	0.00	2.62	21.71	24.33	4.90	0.00	36.77	102
112	Hanner Bone Dust	Indianapolis	0.00	2.38	9.80	12.18	3.15	3.64	25.22	112
116	Bone Dust	Jacob Heck, Indianapolis	0.00	3.76	12.42	16.18	3.83	0.00	25.19	116
117	Complete Fertilizer No. 2	A. B. Mayer & Sons, St. Louis	7.46	2.80	1.29	11.57	2.04	0.97	28.12	117
129	Complete Fertilizer	E. Raub & Sons, Indianapolis	0.00	3.25	14.20	17.45	2.54	1.95	26.78	129
130	Bone Meal	Indianapolis Fer. Co., Indianapolis	0.00	3.15	16.00	19.16	2.95	0.00	27.34	130
134	Hoosier Bone Phosphate	Cleveland-Dryer Co., Cleveland	7.96	0.99	3.26	12.21	2.85	0.40	29.26	134
167	Pure Bone Meal	G. F. Brunner M'g Co., St. Louis	0.00	7.99	14.14	22.13	4.08	0.00	37.93	167
172	Square Bone	Cleveland-Dryer Co., Cleveland	2.97	4.08	8.03	15.08	3.57	0.21	31.52	172
173	Buckeye Superphosphate	Cleveland-Dryer Co., Cleveland	0.28	1.98	4.03	12.29	3.10	0.34	28.98	173
205	Raw Bone Meal	E. Raub & Sons, Indianapolis	0.00	7.77	14.14	21.91	4.82	0.00	39.75	205
222	Homestead Corn and Wheat Grower	Michigan Carbon Works, Detroit	7.75	2.60	0.77	11.12	3.03	1.69	31.57	222
228	Pure Raw Bone Meal	Cincinnati Desiccating Co., Cincinnati	0.00	6.68	17.06	23.73	5.52	0.00	42.22	228
230	Pure Acidulated Bone	Cincinnati Desiccating Co., Cincinnati	2.51	10.20	7.55	20.28	5.18	0.00	44.89	230
242	Pure Pig Foot Bone	E. Raub & Sons, Indianapolis	0.00	9.73	17.16	26.89	3.55	0.00	40.68	242

314	A 1 Guano	John S. Reese & Co., Baltimore, Md.	0.54	8.39	4.03	12.96	2.49	1.40	28.27	314
315	Lister's Ammoniated Dissolved Bone	Lister's Agr. Chem. Works, Newark, N. J.	5.64	3.27	3.57	12.48	2.66	1.70	29.77	315
316	Lister's Success	Lister's Agr. Chem. Works, Newark, N. J.	7.85	3.17	3.06	13.58	3.41	2.06	32.17	316
317	Lister's U. S. Phosphate	Lister's Agr. Chem. Works, Newark, N. J.	5.16	2.29	3.04	10.49	2.00	2.32	25.16	317
318	Valley City Bone Meal	Madison Fer. & Glue Wks., Madison, Ind.	4.18	3.18	11.45	18.81	2.79	0.33	31.94	318
319	S. & F. Ammoniated Dissolved Bone	Madison Fer. & Glue Wks., Madison, Ind.	5.92	3.02	1.71	10.65	1.12	1.15	23.16	319
320	Normal Fertilizer	I. P. Thomas & Son Co., Philadelphia, Pa.	4.44	3.61	3.02	11.07	1.08	2.21	23.25	320
321	Farmer's Choice	I. P. Thomas & Son Co., Philadelphia, Pa.	5.91	2.75	3.21	11.97	1.74	2.57	27.43	321
322	A 1 Phosphate	John S. Reese & Co., Baltimore, Md.	1.65	8.90	2.49	13.04	1.21	0.72	25.66	322
323	Valley City Wheat Grower	Madison Fer. & Glue Wks., Madison, Ind.	5.88	3.55	2.56	11.99	1.66	1.72	26.90	323
324	Bluff City Wheat Grower	Milner & Gentry, Rockport, Ind.	0.00	5.27	6.08	11.36	2.42	5.24	26.96	324
325	Chesapeake Guano	Chesapeake Guano Co., Baltimore, Md.	4.20	5.36	4.76	14.32	2.20	0.72	29.18	325
326	Corn and Oats Fertilizer	Chesapeake Guano Co., Baltimore, Md.	9.07	1.97	1.82	12.86	0.87	1.03	26.78	326
327	Ammoniated Bone Superphosphate	Chesapeake Guano Co., Baltimore, Md.	5.85	3.03	2.74	11.62	1.61	1.24	25.47	327
328	Dissolved Bone Phosphate	Chesapeake Guano Co., Baltimore, Md.	12.35	1.50	0.61	14.50	0.11	0.00	28.26	328
329	1/4 Raw Bone, 3/4 Bone Phosphate	E. Rauch & Sons, Indianapolis, Ind.	1.83	6.07	15.72	23.62	3.47	0.36	37.92	329
330	Our Bone	E. Rauch & Sons, Indianapolis, Ind.	1.44	4.56	7.32	13.32	2.13	1.29	24.63	330
331	Pure Ammoniated Dissolved Bone	Loudenback Fertilizer Co., Cincinnati, O.	3.90	2.69	2.20	8.79	2.58	2.46	24.61	331
332	Black Cross Phosphate	Loudenback Fertilizer Co., Cincinnati, O.	2.16	1.85	4.59	8.60	0.42	2.94	15.32	332
333	Western Reserve Fertilizer	West'n Reserve Fer. Co., Mineral Ridge, O.	0.00	1.27	2.24	3.51	0.00	0.36	4.44	333
334	Currie's Raw Bone Meal	Currie Fertilizer Co., Louisville, Ky.	0.00	3.26	12.26	15.51	4.58	0.36	17.75	334
335	Currie's Guano	Currie Fertilizer Co., Louisville, Ky.	4.82	3.19	2.83	10.84	2.99	2.20	23.81	335
336	Currie's Wheat Grower	Currie Fertilizer Co., Louisville, Ky.	5.83	3.21	2.55	11.59	2.49	2.05	26.99	336
337	Currie's Ammoniated Dissolved Bone	Currie Fertilizer Co., Louisville, Ky.	4.91	3.73	2.43	11.07	3.12	2.32	30.15	337
338	Currie's Falls City Raw Bone Meal	Currie Fertilizer Co., Louisville, Ky.	5.97	4.58	5.63	16.18	0.83	1.54	26.71	338
339	Bone Meal	P. Conkling, N. Y.	0.00	10.39	17.96	28.35	3.06	0.00	42.31	339
340	Bowker's Ammoniated Dissolved Bone	Bowker Fertilizer Co., Mass.								340
341	Bowker's Fresh Ground Bone	Bowker Fertilizer Co., Mass.								341
342	Bowker's Bone and Potash Square Brand	Bowker Fertilizer Co., Mass.								342
343	Bowker's Sure Crop Bone Phosphate	Bowker Fertilizer Co., Mass.								343
344	Bowker's Superphosphate	Bowker Fertilizer Co., Boston, Mass.								344

* This fertilizer is different in its source from others in the list. It is a furnace slag, to which has been added refuse salt and some German potash. From the manufacturer's standpoint its value consists in the silicate of lime and aluminate of lime it contains.

† In case no percentages are given, the meaning is that the firm have submitted samples and affidavits, but that the analyses are not yet finished.

INDIANA FERTILIZER LAW.

For the convenience of farmers, manufacturers, dealers, and others who may be interested, the present law regulating the sale of fertilizers in Indiana is reprinted in full, from Acts of 1881, pages 511-513; or Revised Statutes, §§ 4894-4899.

AN ACT to regulate the manufacture and sale of Commercial Fertilizers, and to prevent the manufacture and sale of adulterated Commercial Fertilizers, and prescribing penalties.

4894. SAMPLE SUBMITTED TO STATE CHEMIST.—AFFIDAVIT.

1. Before any person shall sell, or offer or expose for sale, in this State, any commercial fertilizer for manurial purposes, he shall first furnish to the State Chemist of this State a quantity of such commercial fertilizer sufficient for analysis, accompanied with an affidavit that the substance so furnished is a fair and true sample of a preparation which the person so furnishing desires to sell within the State of Indiana for manurial purposes.

4895. ANALYSIS.—LABEL.

2. It shall be the duty of the State Chemist to make a chemical analysis of every sample so furnished him, and to print the result of such analysis in the form of a label. Such label shall be plainly printed in the English language and shall set forth the name of the manufacturer, the place of manufacture, the ingredients contained in the preparation, showing particularly, in an available form, the percentage therein contained of nitrogen or its equivalent in ammonia, of potash soluble in water, of soluble and reverted phosphoric acid, and of insoluble phosphoric acid, with the certificate of such chemist that the foregoing is a true and complete analysis of the sample furnished him and shall furnish to one or more agricultural papers published in the State, a true copy of the analysis: *Provided*, The same may be printed without cost. The State Chemist shall furnish such labels to persons so desiring to sell, or offer or expose to sale, the fertilizer so analyzed, in such numbers as such person may desire: *Provided*, That the State Chemist shall not be required to furnish a less number than five hundred at any one time, and shall only be required to furnish them in multiples of five hundred.

4896. LABELS TO BE AFFIXED.

3. Every box, barrel, keg, or other package of any substance, or any quantity of any substance, in any shape or form whatever sold or offered for sale as a commercial fertilizer, shall have attached to it, in a conspicuous place, a label containing a certified analysis made by the State Chemist from a fair and true sample of the substance to which such label is attached, as provided in the foregoing section of this act.

4897. SELLING WITHOUT LABEL PUNISHED.

4. Any person who shall sell or offer or expose to sale, as a commercial fertilizer, any box, barrel, keg, or other package of any substance, or any quantity of any substance, in any shape or form whatever, which shall not be labeled with the State Chemist's analysis, as hereinbefore provided, or which shall be labeled with a false or inaccurate analysis, shall be deemed guilty of a misdemeanor, and on conviction thereof shall be fined in the sum of fifty dollars for the first offense and one hundred for each subsequent offense.

4898. STATE CHEMIST.—FEES.

5. The Professor of Chemistry at Purdue University is hereby constituted the State Chemist of Indiana; and it shall be his duty to comply with the provisions of this Act, so far as they relate to him; and for the services he is herein required to perform, he shall receive compensation as follows:

For analyzing a sample of a fertilizer and making his certificate of the same, two dollars. For labels furnished, one dollar per hundred.

4899. TERM "COMMERCIAL FERTILIZER" DEFINED.

6. The term "commercial fertilizer" as used in this Act shall be taken to mean any and every substance imported, manufactured, prepared, or sold for fertilizing or manurial purposes, except barnyard manure, marl, lime, wood ashes and plaster.

NOTES—Manufacturers are requested to state whether they claim potash or nitrates in their goods. They should also remember that the affidavit is made that the sample represents *goods that will be offered for sale* in the State. The sample so submitted can not be withdrawn and another substituted for it. In case manufacturers are not certain in regard to the composition of their goods they should have preliminary analyses made before submitting the official samples. Information regarding preliminary analyses will be furnished on application.

Blank forms of affidavits will also be furnished.

Most dealers prefer substantial tags instead of the paper labels. The tags are furnished at an additional cost of \$1.60 per 500, or \$2.20 per 1,000.

Manufacturers, dealers, and consumers will protect their own interests by reporting any violation of the law.

COUNTY AND DISTRICT REPORTS.

NOTE.—The following reports are such as are required by statute law, and a certificate from the Secretary Board of Agriculture, showing that such report has been made, entitles such agricultural society to the show license fund that may have accumulated in such county treasury. See R. S., secs. 2631, 5269 and 5270.—*Secretary.*

BOONE COUNTY.

Our annual fair was held at Lebanon, August 20 to 24, closing with the largest attendance and greatest number of entries in its history. The receipts were large, but owing to the vast amount of improvements made we were left in debt about \$400, after paying premiums in full and all expenses.

The show in the live stock department, including horses, cattle, sheep, swine and poultry was very gratifying.

Owing to the severe winter of 1887, the wheat crop was almost a failure. The corn crop was the largest in the history of the county, the average yield being 60 bushels per acre, while many fields made 80 to 100 bushels per acre. The oat crop averaged 50 bushels per acre.

CARROLL COUNTY.

The seventh annual fair was held on the grounds of the Association, near Camden, September 18 to 21 inclusive. During the year quite extensive improvements were made by our Board of Directors, in the way of cleaning up the grounds, and the erection of new horse and cattle stalls, as also new hog and sheep pens. A new speaking stand was also erected. The improvements were all made with a view of adaptability and permanence. Our stalls are all large and roomy, convenient to water, and are well roofed.

The display in the various classes was the largest and finest we have ever had and certainly was a credit to the county, showing plainly that our annual meetings are exerting an influence, that they are inciting in the minds of our people a spirit of friendly rivalry among themselves, and a desire to more thoroughly improve the stock of the county as well as the productiveness of our farms. In our premium list we increased the number of classes, as also the amount of premiums offered.

The entries in all the various classes were very large, larger in fact than we ever had before, while the quality of the entries was much better.

Not wishing to particularize, yet we feel we should say that the ladies of our county deserve special mention for the interest they manifested in our exhibition, as was shown by the large and very fine display made in the various classes in which they were interested.

The display in the line of thoroughbred stock, such as horses, cattle, sheep, hogs and poultry, was large and very fine indeed.

While in the way of display we may say our fair was a complete success, yet we are sorry to admit that our attendance was not what we had a right to expect, nor what it should have been, hence, financially it was *not* a success. This may be accounted for in a measure, we suppose, by the fact of its being "presidential year," which, in the history of county fairs, has been shown to be a bad year for them. Another reason was our fall was so very dry that the farmers were delayed so much in sowing wheat that during our fair a great many were in the midst of seeding, which, together with a failure of the wheat crop and perhaps an indifference in the matter, was the cause of our small attendance. Notwithstanding our small attendance we realized enough money to pay our premiums in full, leaving us in debt only to the amount of improvements made.

The wheat crop of this county was almost an entire failure, yielding not more than one-sixth of a crop, which in quality was very poor.

The corn crop, as to quality, was bad, and as to yield, about one-fourth of a crop.

The yield of clover seed was about one-third of a crop. The crop of clover hay was an entire failure, and timothy hay about one-fourth of a crop.

CASS COUNTY.

The sixteenth annual fair of the County Agricultural Association was held at Logansport, August 27 to 31 inclusive.

The weather during the fair was fine, but exceedingly dry, and, of course, dusty. On account of the dust the attendance from both city and country was much less than it should have been to make the fair a complete success, but as it was the association was able to pay all expenses and premiums in full.

In relation to the condition of agriculture in this county it can be truthfully said that it is on the advance, and shows a marked improvement with each returning year; there is quite a diversity of soil, but all well adapted to the growing of wheat, corn and oats, as well as vegetables and fruits.

An attendance at one of the county fairs will convince any one that our farmers, gardeners and fruit raisers, can and do raise as good grain, vegetables and fruits as are raised anywhere in this latitude.

The wheat crop last year was hardly up to the average in quality and quantity, owing largely to the weather, but the corn crop was of superior quality, and an abundant yield. Oats good and fair crop. In relation to vegetables and root crops, the yield was large and of good quality; fruit crop fair.

The improvement of roads still goes on, and with the same progress made in the last few years, we will in a short time have as good roads in this county as are to be found in any county in the State. As we have plenty of gravel and other materials from which to make good roads, there is no reason why we should be behind any other county.

In the matter of farm improvements in the way of buildings, fences, etc., our farmers seem to have determined to do their duty, and much improvement in that line is being done every year; of course this county is like all others it has a few persons who only desire to live and seem to prefer the old log house and rail fence to the more modern and attractive improvements, but such persons will in time become educated or will give place to others who believe in advancement.

Situated as this county is in the Wabash and Eel river valleys, with good soil, plenty of timber, stone and gravel, there is no reason why in a few years, it should not be one of the best improved and most productive counties in the State.

CLINTON COUNTY.

The Clinton County Agricultural Society held its Seventeenth Annual Exhibition at Frankfort, Ind., August 27 to 31, inclusive. The exhibits in all departments were fully up to the average of former years, and, considering the failure of some of the farm crops, were much better than the Association had hoped. The display of stock was never excelled at any county fair, the exhibit attracting great attention and gave rise to much favorable comment from visitors.

The success of the fair can be attributed, in a marked degree, to the untiring efforts of the officers. Harmony and coöperation prevailed in a way that is bound to bring success every time. New attractions were introduced which very materially increased the attendance and interest. The directors are determined that no county fair in the State shall excel the future exhibitions of the Clinton County Agricultural Society. Everything modern will be added; everything of interest secured, and the motto of the society will be, to keep abreast of the times.

Our grounds are among the finest in the State. Good water, plenty of beautiful shade, spacious amphitheatre and commodious halls. The race track is one of the finest, and is kept in good condition the year round. Our floral hall was burned in November and will be replaced with another, next spring, much larger and better. Other improvements will be made from time to time whenever needed.

The county has a population of nearly 40,000 souls. Our farmers are enterprising and progressive. The county is noted for its well-kept farms and handsome farm buildings. Her soil can not be surpassed for richness, and all kinds of grain are raised in abundance. Her agricultural interests will compare favorably with any county in the State.

In the way of fine stock Clinton County recognizes no superior and in this matter our stock raisers are quick to act whenever and wherever an opportunity is offered for improvement.

Frankfort, the county seat of Clinton, is a sprightly little city of 8,000 population and is one of Indiana's go-ahead towns. She has four railroads, giving direct lines of transportation to all the great grain and manufacturing centers of the west; nine churches, four large school buildings with twenty-two rooms and all modern improvements; good streets, beautifully illuminated with electricity and gas. She has a splendid system of water works, and, last but not least, has six

natural gas wells with a daily capacity of over 20,000,000 cubic feet. This latter plant has just been completed at a cost of over \$200,000. Frankfort is bound to grow to one of the finest cities in Indiana and the county and her Fair Association will keep pace with the city.

DUBOIS COUNTY.

Our second annual fair was in every respect a gratifying exhibit of the prosperity and advancement of the material interests of the people of the county. Our last exhibition was more so than usual. A show of country products and many of the premiums most zealously contested for, were awarded to home exhibitors, while in a number of cases heretofore foreign exhibitors have carried away the prizes.

There was a marked improvement in every department in the character of exhibits by home producers, and this feature indicates the steady progress our people are making in all the industries represented at our county fairs.

The result of the last few years of fertilizing is apparent in the productiveness of the farms, and in the quality of such products and the color and form of wheat grown upon such fertilized land was especially noted and commended.

Taken all in all the year 1888 was one of prosperity and advance to the producing interests of this county.

DELAWARE COUNTY.

The thirty-sixth annual fair of the Delaware County Agricultural Society was held as usual during the month of August, and was in every way a success. The attendance was large, and the receipts ample to pay for additional improvements, the premiums in full, and leave a good balance to the society's credit.

From the fact that every year shows a large increase in the number of exhibits, and a higher order of excellence in every class, it is evident that the farmer, horticulturist, breeder of live stock, mechanic and artisan are imbued with that spirit of progress that such exhibitions as the county fair is intended to foster and encourage.

Liberality in premiums, fair and courteous treatment by the managers of the association, has been met by the people, and it may be safely said that the fairs held at Muncie have no superiors anywhere in the State, and none are more generously patronized by the people.

Nature's great gift, natural gas, has stimulated all the people with new life, new energy, and those who were disposed to be slow have been compelled to make advancement.

There is no occasion to go into details as to what advancement is shown. The evidence is upon every hand, and to mention one department without naming all would be unfair. To properly name all would require a volume that you would not have room for, and that the writer has not time to prepare. Within one year the city of Muncie has increased nearly one-half its former size, being now a city of 12,000 inhabitants; has added nearly \$1,000,000 to its material wealth, which speaks for the people of the city and its progress.

DECATUR COUNTY.

Our association held its fair this year from August 27 to September 1, on beautiful grounds east of the city of Greensburg. The weather was threatening, and on Friday morning it rained, cutting the attendance short, at least one-half more than we expected for the last day, but with the elements against us we did well. Our receipts were as much as former years, and everything passed off smoothly, exhibitors were satisfied and our premiums were paid in full.

With the additional stock-holders we feel confident Decatur County will have the best fair in 1889 in Southern Indiana. We made many valuable improvements early last spring. Erecting four large buildings for sheep and hogs, on improved plans; they are not only an improvement, but a convenience that all exhibitors of sheep and hogs should have. We also moved other buildings with a view to adding beauty to our grounds.

Our county takes the lead in cattle, hogs and sheep, in fact takes the ribbons at all the fairs they attend.

I want to make especial mention of the English Berkshire breed of hogs and Poland Chinas. Step by step our farmers have been advancing in propagating and breeding the best breeds of hogs. No county in this State leads us. Our Stock Breeders' Association meets every month, and is a great help to the farmers.

But a few farmers and business men take interest in, or manifest the least anxiety as to the success or failure of our fair, but at our last exhibition we were encouraged by many of them offering their services, and wishing us success; such a feeling expressed by substantial men of our county and city makes a society feel good if nothing more.

The cattle show was the best for many years, both in pedigree and graded classes.

The show of Jerseys was the finest ever on our grounds.

The Sheep Department was represented with Cotswold and fine wools. The farmers recommend the former in this part of the State as being the best to raise for wool and mutton.

The display of implements was good.

The Floral Hall or Ladies' Department was very creditable, and in my opinion should be controlled by the ladies. Turn it over to them and it will be a great relief to the society.

Our poultry show excelled all others in numbers and quality of birds. Upward of twenty different breeds were shown. Our association has been looking after the poultry interest, and will continue to do so as long as they have the encouragement they met with the past season.

The speed contests did not possess the attractions this year that the society desired or have heretofore witnessed on their splendid track. The small number of entries was one cause, but the races that did go were hotly contested.

In draft stock we should do better; there is much room for improvement. I think the Clydsdale and Norman, for heavy draft should be more encouraged, and while the roadster should have a prominent place, the draft should not be lost sight of,

for on him our all depends; whether heavy or light draft he has the work to do. The association should offer good premiums on heavy draft stock, and then there would be lively competition for the money, especially on imported draft stallions.

The men that are rearing mules are not encouraged in our county as they should be. Mules are as easily raised as horses, and at weaning time are worth as much as any other draft colt. Why not breed more; they are more hardy and can stand the heat and cold more than a horse.

As to our county. We have the soil, wealth, intelligence, and natural advantages to make us a great county, with lime stone quarries in the southern portion. Natural gas is found by boring in every part in paying quantities, it is one of nature's greatest luxuries of the age. Some of our farmers are availing themselves of this great element of mother earth to warm and illuminate their homes; our age is a progressive one, and in my opinion fair associations and agricultural societies should be up and on the alert.

FULTON COUNTY.

Our fair was held on the Society's beautiful grounds, adjoining the town of Rochester, from September 5 to 8, under circumstances which seemed to have a tendency to denominate for once the fair in Fulton County a *failure*.

First, it being a campaign year, in which the people of Indiana had a large interest, it was thought by many would detract from the fair.

Secondly, the experiment of holding our fair the first week in September instead of the last, as heretofore, the farmers would be too busy seeding to spend time to attend.

And the third hindering cause of success was that it had been decided by the Bishops of the M. E. Church to hold their General Conference, commencing in Rochester the same day of our fair.

These, together with the usual number of chronic grumblers, was enough to discourage many from doing what they might have done.

But the managers, believing that there is no excellence without a proper effort to merit it, pushed ahead, fully determined to succeed. And the result was the most satisfactory fair held for several years.

The entries of registered horses far exceeded those of any previous year, and the same may be truthfully said of graded stock.

Entries in registered and graded cattle were complete, showing an unusual interest in raising the finest stock.

Sheep and hogs were not so largely represented, but the quality was good, displaying the pride of stock raisers in Fulton County.

The time of holding the fair being a little early for this section for fully maturing crops, Agricultural Hall was not as full as on former occasions. But the managers regard this mostly due to the lack of interest on the part of the farmers to bring in what they could.

Horticultural Hall was well filled, displaying fruits and flowers of the finest quality, impressing every beholder with their beauty and fragrance.

The kitchen and dairy department exhibited the skill and art preservative of the housewife and maiden.

Mechanical and Fine Art Halls showed the ingenuity of the citizens of Fulton equal to any county, and that none can excel in fine paintings.

Nothing of an immoral nature was allowed practiced on the grounds, making it a happy greeting and enjoyable time for all that attended. Taken altogether it was a success socially and financially.

Fulton County lies midway on a line between Indianapolis and Michigan City on the Lake Erie and Western Railroad, and directly west of Fort Wayne on the Chicago and Atlantic Railroad, happily located as to timber and different qualities of soil, which never fails to yield a good return to the industrious husbandman, and the last season has been no exception to the rule.

As a reward for proper labor the citizens of Fulton County are erecting finer buildings, paying off mortgages, and living more comfortable than in former years.

GREENE COUNTY.

The financial report of the Greene County Agricultural Society, clearly illustrates one of the many unpleasant duties that frequently befall those who assist in the management of agricultural fairs and help to make up the "deficit." Two reasons may be plausibly assigned for the partial failure of the county fair held at Linton, October 1 to 6, inclusive. The first and perhaps the principal reason, was the frequent rains during the week; each being followed by damp, cool and cloudy weather; making it very unpleasant for those who usually patronize county fairs and no doubt deterred large numbers from coming. The second reason was the political gatherings in the county at the time the fair was in progress; this should have been avoided, but the political pulse was beating too warmly to be estopped by an agricultural show and those of a political turn of mind patronized the former. But the Linton fair, as it is sometimes termed, for the year 1888, must not be taken as a true exponent of the rapid progress and industrial greatness that has marked the period just closing.

Hundreds of acres of wet and marsh lands have been reclaimed by open and tile ditches; valleys, hills and dales during this year have responded to the labors of the agriculturalist most abundantly, and the bountiful crop that has been garnered and placed on the market, has given a new impetus at many of the trade centers and business men of all classes are sharing alike in the general prosperity. The day laborer, the mechanic and the merchant are feeling the salutary effects of the bountiful harvest. Commodious dwellings and large barns are taking the place of the primitive structures of our farmers. The improvement in live stock is no less marked. The swine, the bovine and the equine of to-day in Greene county have but a slight resemblance to their ancestry of a few years ago; the Norman and Clydesdale horses are a grand improvement on the "carry all" in our grandfathers day. Rysdik's Hambletonians have brought time and distance nearer together—the blood seems to flow through the veins of these noble beasts at a more rapid rate. The eyes sparkle with a brighter lustre and their countenance betokens a

greater degree of intelligence as a result of that care and skill common in the scientific age in which we live. The beautiful herds of Short Horn, Hereford and Jersey cattle are fast displacing the primitive herds, and only where nature has been unreclaimed do we find the scrub in the ancient garb. The practice of de-horning cattle in this country is of recent origin and its friends claim many good results in its favor. In the first place they become more docile together, they fatten faster, and are more easily handled. The greatest objection that may be possibly urged is that it is somewhat barbarous, but when the horns are removed while young the loss of blood is not greater than when castration is performed on the young male animal, and we do not believe the objection will hold good, judging from our stand point.

Greene County has another interest. Though the last that I shall mention, it is in no wise the least, and I desire to call particular attention to it. In townships seven and eight north and range seven west we find the celebrated coal "K," and known on the market as the Island City coal. This coal field embraces over fifty thousand acres of coal lands, and the average thickness of this coal vein is not less than five feet. The coal is bituminous and free from any foreign substance; is very easily mined with picks or machines. Good roofing is generally found, and no trouble whatever has been experienced with gases. The I. & V. R. R. has a branch road fourteen miles in length extending into this coal field, and also the I. & I. S. runs from east to west through this territory. Three very large mines are in successful operation, having a capacity in all of two thousand tons of lump coal per day. Over six hundred men are now required in and about these mines, who are receiving from \$1.50 to \$2.50 per day. The developing of the coal interest in and about Linton has been the means of increasing the population at this place nearly four fold in three years, and every business interest has correspondingly increased; but no part of our population has been so greatly benefited as our farmers. Their lands have been doubled in value, and they have a home market for many of the farm products. In closing we only wish to say that the Greene County Fair, which has been held at Linton for nineteen years, has been an important factor in the various improvements herein enumerated.

GIBSON COUNTY.

The fair of 1888 was the largest and best fair ever held on our grounds, this being our thirty-fifth annual fair. The weather was all we could ask for, and with our present water works system we had no dust to contend with.

This year we had an "Old Folks' Day," where all over the age of 70 were admitted free and treated to a free dinner. Over 225 old citizens were seated in the amphitheater and listened to addresses from ex-Governor Porter and Judge Niblack on ye olden times. This was one of the best days of our fair, and the attendance was correspondingly large.

It matters not whether the other departments are well represented or not, the floral and art halls are always crowded and made attractive. Great credit is due the ladies for the fine displays made in these halls, as not many State fairs excel us. This is a sure index of culture and refinement.

In the speed department there was much interest manifested, and the entries were, in many cases, among the best and fastest representatives of the turf. No pool selling was allowed on the grounds. The contests were very fine, our track being one of the best in the State.

Our county is getting quite a notoriety for its fine stock. In our horse department we had several imported stallions and brood mares, both in draft and light harness. The cattle and hog departments were above an average for county fairs, and many remarked that ours was more like a Southern Indiana State Fair than a county show. Our Society holds a Farmers' Institute once a year, which is a great benefit to our farmers, and our meetings are attended en masse, no hall in the city being large enough to hold the crowd. Our county is still in the lead and well may she be called the banner county of Indiana. Our people are always ready and willing to help the farmers to the front, for on them depends our living.

As regards education our people are prepared to take a seat in the front rank. We have good school buildings, well furnished and equipped in modern style, and a No. 1 Normal School besides.

With all these surroundings there is no good reason why our people may not, with industry and economy, be prosperous, contented and happy.

GRANT COUNTY.

The second annual fair of the Grant County Agricultural Society under the new organization and the thirty-fourth of the old, was held August 28 to 31, at Marion, Ind., and was attended with general success. The number of entries exceeded those of last year by fully 200, and any previous year by over 300. All premiums were paid in full, and a balance of over \$300 remains in the treasury.

As to the general prosperity of the farmers, the crops were good, with the exception of wheat, that being almost a failure; corn being an unusual yield. Potato crop in some localities was a total failure, owing to successive planting on the same ground. Public drainage is in advance of any previous year, converting open ditches into tile drains. Hay crop short on account of extreme drouth followed by a hard winter, causing injury to the root. Oat crop a good average. Root crops and gardening generally fine. Stock healthy and doing well, with few exceptions. Some hog cholera in certain localities, but not as distinctive as in former years. Imported stock has advanced materially in number and quality. Quite a number of fine imported sheep have been added to that industry of the county. Cattle, hogs and horses have been rapidly improved by the introduction of finer blood. The most gratifying result of our fair is that the premiums on blooded stock and farm products were awarded to residents, mostly of the county, many of our exhibits receiving high awards at neighboring fairs.

We now have at least 200 head of pure bred cattle and a number of pure bred horses, consisting of Clydes, Norman and Belgium; of pure bred sheep probably 300 head, consisting of Shropshire, Leicester, Merinos, etc.; of hogs, Berkshire, Poland China, Yorkshires and Chester Whites. Many persons have abandoned the swine industry owing to the frequent ravages of cholera. Yet, in general, it is the leading industry, cattle, taking the second place. Corn is the chief

agricultural product of our county. The latest and best improved machinery that can be obtained is being placed on the most humble as well as the most improved farms. The silk worm industry has been recently introduced in our county with promising results, and a very fair exhibit was made at our last fair. From experiment it is found that the sugar beet industry could be worked in Grant county with profitable results. The science of stock feeding has been improved very much by means of machinery prepared for that purpose, with gratifying results. The natural gas development of our county is one of magnificent proportions, and bids fair to make our county one of the greatest manufacturing centers of the United States, we now having 23 gas wells that in the aggregate have a capacity of at least 150,000,000 cubic feet of gas every 24 hours. Since this development we have added to our manufacturing interests 23 factories to the town of Marion. Also, the location of the Soldiers' Home, an institution of national renown, with fine prospects for the addition of other manufacturing and commercial interests in the near future.

HAMILTON COUNTY.

The tenth annual exhibition of our Agricultural and Fair Association was held on the grounds near Noblesville, August 27 to 31, inclusive. The display was large and varied, particularly in the live stock department. The cattle show was especially good. Many herds from our own and adjoining counties were on exhibition, and competition was close. The same may be said of horses and hogs. Many of the best trotters of the State were entered in the races, which were more hotly contested than at any former fair. The Association, after trial, has adopted the plan of employing experts to act as judges. Experts judged the needlework and almost all the live stock. The plan has given eminent satisfaction to the Directors as well as the exhibitors. Miss Heron and Mrs. Seward, of the Woman's State Fair Association, efficiently performed their duty as judges of needlework. Owing to the military encampment held at Noblesville early in August, and the partial failure of crops, and other adverse circumstances, the attendance was not up to the standard of former years, and for the first time since it has held a fair the Association was obliged to pro rate its premiums. But the officers of the Association have redoubled their efforts, and are determined to make the next fair a success in attendance as well as in exhibits.

Hamilton County is in the central part of Indiana. It has an area of 400 square miles and a population of over 25,000. Within the last few months a great gas field has been developed within its borders, and the introduction of this fuel will do much for the preservation of the timber of the county. The forests are composed of second-growth white ash, hickory and white oak in very large varieties. We also have large forest trees of white and burr oak, hickory, gray, white and water ash, rock and water elm, soft and hard maple, red and white beech and sycamore. Large quantities of lumber are annually shipped from the county.

The agricultural resources of Hamilton County are such as will compare favorably with any county in the State, as her soil is well adapted to all the crops that are produced in Indiana. Statistics for 1887 show that this county excelled in the production of oats, rye and clover hay; but large quantities of all other cereals are also grown. It is one of the best watered counties in Indiana. White River crosses the county from northeast to southwest, and receives tributaries which reach every part of the county. Besides the drainage furnished by these streams the surplus water is removed by over 600,000 rods of tile.

There are over 8,000 head of horses in the county, and great interest is taken in breeding. Many farmers have purchased highly bred animals, and the horses of the county show great improvement. What has been said of the horse interest may well be applied to the raising of cattle. Herds of short-horns and Jerseys exert a beneficial influence upon the stock of this region. Sheep and hogs are raised extensively. The farmers of Hamilton County are among the most intelligent of their class, and take great interest in everything which pertains to the up-building of agriculture.

HARRISON COUNTY.

The financial condition of this society does not make as favorable an exhibit as is shown in the reports of former years for the following reasons: Several changes were made in the management of the association which lessened the receipts, but the great drawback was the unfavorable weather. The opening day of the fair was pleasant and promising, and the entries came in at the usual rate, but the next and subsequent days of the fair week were very inclement, and the entries fell off considerably from former years, especially so in all stock entries. This, too, shortened our receipts, while it did not lessen the premiums to be paid. But, notwithstanding all these disadvantages, the society paid all premiums and had a small balance left.

The corn crop of Harrison County was the largest ever grown, though the plant was considerably damaged in the early spring by cut-worms, an insect which is not common in this county, and later in the season by the chintz bug, another insect which does not very frequently disturb our farmers; but the abundant rains throughout the season, together with good cultivation, produced the largest corn crop ever grown in the county. At the gathering time the weather was unfavorable, and it was thought much of the corn would be damaged, but this, however, was not the case, and the marketable condition of the crop is much better than was expected.

The wheat crop of 1888 was better than the preceding year. Though the extremely dry fall of 1887 prevented the sowing of as large an acreage, the yield per acre was much larger and of excellent quality.

The acreage of the present growing crop of wheat is in excess of last year's crop, and the favorable fall and winter weather places the crop now in excellent condition.

The fruit crop of the county is largely in excess of former years. Of apples, peaches and fruits of all kinds, there was enough and to spare, and apples are

now (January 3) a glut on the market at thirty and forty cents per bushel. The present fruit crop demonstrates that with proper market facilities fruit-growing in Harrison County would prove a profitable industry.

The condition of all stock is good. The open winter and an abundance of corn and other feed have enabled the farmers to keep their stock in good condition.

HENRY COUNTY.

We may be again congratulated on the success of our last fair, held at New Castle, August 14 to 18. To go into particulars as to each department, further than to mention the noticeable increase in number and the improvement in the quality of the exhibits over those of former years, would be exhaustive.

We were not overtaken by the predicted adversity to fairs held in years of heated political campaigns. But the communities that have contributed to the success of this fair manifested again their appreciation of the tireless efforts of the management in their every exhibition to please, to benefit and to succeed. The loyalty of the Society to such appreciation is manifested anew with each recurring year, in the increased facilities and additional comforts provided in each department for the accommodation of its patrons, both for exhibitors and visitors. New exhibitors and the return of old ones, the attendance from greater distances, the appreciation of the new race track evidenced by double the number of starters in each event thereon, and the spirited and closely contested bicycle races, were among the noticeable features of this year's exhibition, while every department was crowded with exhibits, and but for one day of rain it could truly be said that the fair this year proved a whole week's festival to all.

The number of entries, premiums paid, etc., in each class, and our exhibit of moneys received and disbursed, will verify the statement that the Society is annually improving its accommodations and beautifying its grounds, and the presumption is indulged in that the fair is a fixture and its success assured.

HOWARD COUNTY.

The 18th annual fair of the Howard County Agricultural Society, which closed September 15, 1888, was a marked success in every particular. The number of entries exceeded any previous year. Premiums were paid in full, leaving a surplus. Buildings and stalls are in good condition, and the only improvements to note during the year is the sinking of a gas well, from which fuel is obtained for the mechanical department.

A full description of the county and its products has been given in my former reports. A few changes, however, are worthy of mention.

Every road leading to the county seat, Kokomo, is now a free macadamized or graveled road. This includes over 250 miles of free roads. Every bridge in the county is now a substantial iron structure with stone abutments. Since the discovery of gas fifteen manufacturing concerns have located, employing \$5,000,000

capital and 1,500 men. Eight acres of the field that produced the premium corn last year is now covered with substantial brick buildings one to four stories in height, to be used by the Diamond Plate Glass Company.

Howard County is the equal of any county in the State as an agricultural section.

Kokomo presents the most desirable location for manufacturing establishments of any city on the continent. None with equal shipping facilities have an unlimited supply of nature's cheapest fuel on every side and under every farm.

HUNTINGTON COUNTY.

The County Agricultural Society held its annual exhibition September 25 to 29. Never since its organization were the prospects for a successful fair better than this year. However, the cold, disagreeable weather of the week before and the two first days had a tendency to keep people at home, where they could gather around their own vine and fig tree without being annoyed with that musical sound, "Nice cool lemonade, five cents a glass."

Still our fair was not a failure by any means, but successful beyond expectation, and while the attendance was not large (except one day) we had "comfortable" crowds that were easily handled and taken care of, a fair that, had the weather been pleasant, could have been enjoyed.

The society the past year built a new barn of fifty stalls, which helped us out nicely, but we did not have any too much room, as we had to stable stock in the livery barns in the city, notwithstanding that we have 720 stalls on the grounds.

We use the "one judge system," and pay our premiums in full, which accounts, in a measure, for our success.

Hay and oats were good crops this year in this section of the country. Wheat, while not an average, was pretty fair in some localities, in others an entire failure. Corn about the same as wheat, only a larger average.

Very little commercial fertilizers have ever been used in this county. More care is taken to utilize the stable and farmyard manure than ever before. Clover is the great staple fertilizer. It not only recuperates the soil, but proves very remunerative for pasture, seed and hay.

Our farmers are beginning to take interest in our annual exhibitions, vying with each other as to who can best cultivate grounds and improve his stock.

Labor saving machinery and the best of farm implements of the latest patterns are used quite extensively.

The prospects for wheat is not very flattering, owing, in a measure, to the open winter and the continued drouth with early fall, and the farmers are correspondingly low spirited.

JACKSON COUNTY.

The thirteenth annual fair of the Jackson County Agricultural Society, held on the grounds of the Society, east of Brownstown, September 18 to 21, was in some respects successful and in others a failure.

The floral department was better filled and better arranged than ever before. The poultry exhibit was far ahead of any ever seen on the grounds, and the sheep department was fairly well represented, but cattle, hogs and horses were most conspicuous on account of their almost entire absence.

The speed ring was but partly filled, owing, so think the management, to the small purses offered. Yet the higher classes were all filled and the contests spirited.

The water question, which for years has puzzled the management, is now settled, and through the pipe spoken of in our last report an abundance of water was supplied both to man and beast.

It might be well worth while to explain why our fair was in some respects a failure. There are several reasons, viz.: The inattention and want of interest of the stockholders. There has been for several years 105 shares of stock, valued at \$25 per share. The Society was bound to raise money to pay off indebtedness, and an assessment of 25 per cent. was made on each share. Of the 105 shares only about thirty paid the assessment. This serves to illustrate the lack of attention paid by the stockholders.

On each morning of the fair great, black, ominous-looking clouds were to be seen around the horizon. Persons wishing to attend from the out townships of the county were restrained by the threatening weather, and, as the attendance depends greatly upon the out townships, it was cut down considerably, diminishing the gate receipts.

Lastly, the Seymour District Fair, which is in the same county and within twelve miles of our grounds, was held the week before ours, and for various reasons detracted from the attention we would have received had the dates been further apart.

It is the intention of the management to try and reorganize, so to speak, and endeavor to raise funds to pay off the indebtedness that is hanging over us, part of which was contracted in years long gone past. It is hoped and expected that the year 1889 shall witness one of the best fairs ever held in this county, and if energy and push will make it, we shall have one of the best county fairs in the State.

JEFFERSON COUNTY.

Our twelfth annual fair was held on the grounds of the Association five miles north of Madison, near Wirt station, on the J., M. & I. railroad, from September 4 to 6 inclusive.

The association have not grounds in shape yet for holding a first-class fair, but keep adding improvements each year, and fully expect in the near future to have all the necessary buildings for accommodating the public completed. There being only a small gate fee charged, merely for the purpose of defraying expenses,

the premiums were paid from a fund raised by an entry fee and donations for that purpose, there being quite a number of individuals that offered private premiums, which shows that there is a disposition on the part of the citizens to help build up the association. A majority of the entries were merely made to compete for a ribbon or diploma.

The exhibit of stock was not large, as the facilities for accommodating exhibitors was limited, but the association expects next year to have ample accommodations for all. The display of farm products was very good. The ladies' department was not as well represented as in former years. The mechanical department was well represented, almost all the machinery being in motion from a power shaft furnished by the association. The display of flowers being the best ever had in the county, and, I think, was never excelled at any county fair in the State; the association erected a building expressly for this department 22 by 48 feet, which was filled to overflowing with choice pot plants, cut flowers and floral designs. The fruit department was well filled, and showed that our county is second to none in the State in the production of fine fruit.

Agriculture in this county is keeping step with the march of progress. Mixed farming is almost universally practiced. We have been blessed with an abundant crop of all kinds of products, there being the finest wheat and corn crop ever raised in the county. We raise a surplus of almost every kind of farm products. The farmers are practicing a more systematic mode of farming than was followed in former years. There is scarcely a crop of any kind planted without using fertilizer, and I do believe there is not a county in the State that gives better results from the use of commercial fertilizers. That portion of the county lying along the Ohio river is peculiarly adapted to fruit raising, as the shipping points along the river demonstrate from the quantity that is shipped during the fruit season. In addition to the many large orchards already bearing there has been many more planted during the year, and many are preparing to set out fruit trees largely next year. There is marked improvement in all kinds of stock, particularly in horses and cattle. Feeding cattle and hogs for spring market has become quite an interest in this county. Madison, the county seat, is one of the best located cities on the Ohio river for manufacturing, and is growing in that interest every year. All the principal roads in the county are graveled and are toll roads. The question of free pikes is being agitated and will soon be brought before the people. Improvement in farm buildings is keeping pace with the other interests.

JAY COUNTY.

Our County Agricultural Society closed its seventeenth annual exhibition with the best success it has ever had in the history of the society. We have built one hundred new box stalls, and yet failed to supply the demand for stalls. Next year we expect to build quite a number more to supply the demand.

The interest in the improvement of horses in this county seems to be on the increase, and we think our horses will compare favorably with any other county in the State.

A great interest is manifested in raising good cattle. We have all the leading breeds. Short Horns, perhaps, taking the lead. Swine—Poland China and Berkshires are receiving much attention; also Chester Whites stand well.

Our Poultry Department was not represented in point of numbers, as well as last year, but did fairly well.

Farm products of all kinds were well represented and of the very best quality.

Floral Hall, as usual, was crowded to the utmost, and was said to be the finest display ever made in the hall.

The speed department was very good, and was highly applauded by our people.

We have made some valuable improvements this year—expending near \$1,500 in improvement of grounds and buildings.

The surface of the county is generally rolling, and of good rich soil, which is generally tilled, and produces crops of all kinds. The timber consists of oak, elm, ash, walnut, hickory, sugar, beech, sycamore, maple; comprising about 50 per cent. of its surface.

JASPER COUNTY.

The seventeenth annual fair of the Jasper County Agricultural Society was held on its grounds, near Rensselaer, August 21 to 24 inclusive.

Our people do not take the interest in making a display of the productions of the county that they should.

The attendance was not equal to former years, but as we did not have to make any improvements we were able to pay the expenses of the fair, and all premiums in full.

The entries were not large, although the show in some departments was good, especially in the horse department.

The corn crop in our county is light this year. The oat crop promised a heavy yield, but was injured by rain storm, as was the corn. Hay crop good.

No disease among live stock, and wintering in good condition.

The northern portion of the county is drained by the Kankakee river, and the southern by the Iroquois.

There is considerable of timber along the streams, but about seventy-five per cent. of the area is prairie.

Rich deposits of iron ore are found in the northern portions of the county, and building stone of superior quality is found in abundance.

All the cereals are produced, and hay and grass equal to any county in the State, making it a good location for stock raising.

Our last report stated we were boring for gas and oil. We found gas in small quantities, but not enough to be of any benefit, yet we think if properly tested it can be found here in paying quantity.

KNOX COUNTY.

For the eighteenth time our society held its annual fair, and for the corresponding number of times we now make our report of the doings of this county, to show that we have done our part in the encouragement and promotion of agriculture, in promulgating the best methods of tilling and draining, in properly testing inventions to economize labor, in comparing the merits of the various products of the soil, and in stimulating, by competition, a general improvement in all that pertains to the farm.

The date chosen for our exhibition was not a time of year when fair weather can be most expected, but a week that we could profit by the observations of those of our people who would come home fresh from the lessons of several State fairs, and that we might get the benefit of exhibitions at certain nearer fairs of importance. Our expectations were realized in every way, and we could have hoped for nothing better except the weather. Entries were up to former years. Rain the last three days of our fair did not hinder our people from attending, as a large crowd were in attendance each day. Although thus hindered the money receipts were above our expectations, indicating that if clear days had given the opportunity the proceeds would have been unprecedented for a county fair having nothing but legitimate fair attractions.

The horse, cattle, sheep, hog and poultry departments were well filled, and probably the best display that has been made since the organization of the society.

Floral Hall was full of the finest fabrics that could be made by women. There is no room for comment on the articles, for they were all as fine as could be made.

The agricultural implements on exhibition were too numerous to itemize. Several different kinds of self-binders and mowers, all running by steam, was a show within itself, besides corn shellers, sickle grinders, cider mills, and a host of other things in motion.

Speed was good each day, which attracted large crowds to witness the races.

The carriage men made a splendid show of carriages, buggies, and everything in their line of business. It was one of the largest shows of the kind ever witnessed on the ground.

The wheat, corn, oats, hay and potato crops in the county were good. Apples, peaches and other fruits were abundant.

LAKE COUNTY.

The Lake County Agricultural Society held its thirtieth annual fair at Crown Point, from September 18 to 21. The entries of horses were about the same as last year, but the exhibit of other live stock was quite poor. The floral hall exhibit was good, particularly in the new educational department. This is an interesting and valuable feature of our fair.

The attendance was only an average, much dissatisfaction and loss of patronage being occasioned by abolishing family season tickets. The society has reconsidered this matter, and next year we shall have family tickets, and it is hoped an increased attendance.

Horse raising is still a leading feature of our farming; our monthly horse markets bring the buyer and seller together at home. Farmers, near stations, are engaged largely in shipping milk to Chicago. As a result the butter product is becoming scarcer, and the price correspondingly higher. General crops were good the past year, though much oats were lost by reason of severe storms at harvest. Barbed wire is the chief material used in fencing, and the stock law is fully enforced.

With the increase of manufacturing interest in the north part of the county, an increased demand will arise for garden produce, and the market be brought nearer home. Situated as we are near the "market of the west," Chicago, and with thirteen railroads through the county, we never fail to find a market for all products.

This county lacks gravel beds, and as a result the roads are bad at times. Large scrapers keep the roads well-surfaced, and allow the water to escape freely, consequently we have no such bad roads as years ago. Some forty miles of dredge ditches (20 feet wide) have been dug through the Kankakee and other marshes, and several miles more under contract. These already have had a beneficial effect upon the wet lands, and with lateral ditches fully completed, the Kankakee swamp may become a thing of the past.

Several artesian wells are in successful operation at Hammond and East Chicago, at a depth of some 1,800 feet. An attempt has been made to drill one at Crown Point, but at this date a depth of over 2,000 feet has been reached with no flowing stream. This assures us that we have no gas fields here.

LAPORTE COUNTY.

The Thirty-Seventh Annual Fair of our Agricultural Association was held on the county fair grounds, commencing October 2, lasting four days. Notwithstanding the inclement weather it was well attended, and the exhibitions in some departments exceeded former exhibitions, especially in the horse department, every stall, including all the new ones built during the season, being filled.

Our premiums were paid in full, and several substantial improvements were made.

During the year the increase of pedigreed stock has more than kept pace with the advances of agriculture and manufacturing within the borders of this county, and it has been quite fully demonstrated that the care and expense of raising a thoroughbred is no greater than a "scrub."

The crops throughout the county have been very good, consequently the farms have been improved correspondingly, and improved appliances are constantly being brought into requisition, more scientific methods are being employed, doing away in a great measure with the drudgery that characterized the farmer's life in the days of the past.

The thoughtful farmer is not slow to take the advantages that our agricultural societies offer, to grasp the knowledge and experience of others that will meet his peculiar views, therefore becoming men of the broadest culture, and men

that are a practical benefit to the community in which they reside. Our educational advantages are second to none in the State, and our manufacturing interests, or industries have more than doubled in the manufacturing centers of this county, Michigan City and Laporte during the past year. Not only are the "harbor" and "maple" cities becoming manufacturing centers, but the cluster of crystal lakes lying between these two cities, are becoming famous for their beauty, and are destined to become the place of "rest and recreation" for all those that desire it throughout the State. Fargher's Island, Holmes' resort, and the New Church or Swedenborgian Assembly grounds, are becoming quite famous. One hundred acres of land has been purchased, and is being laid out for cottages, on the "Chautauqua" grounds by the Baptist denomination of this and surrounding States, which will make within the coming year one of the most healthful and delightful summer resorts in the western middle States, and which we think will be of great value to this county. We are making an effort to keep the interests of agriculture apace with the other developments about us; committees have been appointed, and arrangements are being made for the holding of a Farmers' Institute in the near future, to discuss the different problems and questions that will be useful and beneficial to the tillers of the soil.

MONROE COUNTY.

The fourth annual fair of our County Agricultural Society was held on grounds near Bloomington, September 4 to 7, inclusive. On account of rain a portion of that time our exhibits in the horse and cattle department was not so good as it no doubt would have been, but notwithstanding this hindrance the society paid all expenses and premiums in full. The horses and cattle that were exhibited were generally of a high order and has given a still greater impetus to breeders to improve their stock. The exhibit of hogs and sheep were very good, as well as the poultry exhibit. The show of vegetables, grain and seeds, as well as fruits, was excellent. The ladies department, consisting first of table luxuries, was excellent, much skill being displayed in getting up this part of the show; next, our business exhibits, hand and machine work, decorations, art work, etc., were fine. In fact, the woman's department was the center of attraction, and much commendation and praise was given them for the skill displayed in its arrangement. The amount of premiums paid was \$772.39; amount of expenses of the fair was \$354. Total receipts of fair, \$1,126.39; premiums paid, \$772.39; incidental expenses, \$354; total expenses and premiums, \$1,126.39, balancing our accounts for the year.

MARION COUNTY.

Progressive in its plans and earnest in its efforts, the society the past year has steadily advanced, retaining its usual interest.

Many excellent papers have been provided, and the discussions were marked with great earnestness.

On examining the reports during the year I deem the following a fair abstract of them :

Wheat was short in quantity and inferior in quality, mostly grading No. 3. A more abundant crop of good corn was never known throughout the country. Hay one-half a crop. Oats an average yield. Garden products good, with the exception of early potatoes. Standard fruits were abundant; most small fruits were a short crop.

The financial condition of the society has been much better than for the past two years, enabling us to hold our three annual fairs—culinary, strawberry, live stock and vegetable, on which \$128 was offered in premiums. It has been sufficient to meet every obligation of the society, leaving a nice little sum in the treasury with which to commence the new year, and we hope for continued success.

MONTGOMERY COUNTY.

The time having come for another report from Montgomery County, the first impression of the writer is that it is a waste of time to write anything of Montgomery County or its agricultural association, but upon more deliberate thought the conclusion is reached that from so good a county and one that has reached such high standing in the advancement of agriculture certainly something should be said. The Montgomery County Agricultural Association was organized in 1880, and its first fair held in September of that year. Nine successive fairs have been held, and each has been fraught with success that has been looked upon as marvelous.

With each succeeding fair the zeal of the management as well as the interest of the exhibitor and visitor has but increased until it no longer remains a doubt but a positive certainty in the mind of every one that the Montgomery County fair is second to none in the State. Why is it so?

First, because to the exhibitor such large premiums are offered and promptly paid in full that it is an object of profit to them to bring their stock and products. The sight-seeing public realize this in the fact that they can see the best the country produces (for no one need exhibit at our fair that has not the best) and enjoy a day upon a fair ground such as can only be found here.

Within the last year great improvements have been made. The old buildings have been remodeled and improved, new buildings added, and much done to beautify the grounds.

The water from the grand springs on our grounds is used by the Crawfordsville Water Works Company to supply the city. After using water from other noted springs it was decided by the water works company that the fair ground springs was the best, and overtures made to the association were accepted, so that now we not only have the most excellent water on the grounds but throughout all the city. Our grounds are supplied with this water pumped directly from the springs. Of its purity and abundance those who attend our fairs can testify.

In addition to other improvements an artificial lake (at a cost of \$1,700) has been formed in the circle, which enhances the beauty and attractiveness of the grounds.

The Montgomery County Agricultural Association has not had an aim to declare large dividends, and, although each fair has been wonderfully profitable, every dollar has been spent in efforts to make the grounds attractive. No dividends have ever been paid, nor is it the intention of the present management that any shall be paid.

From tables you may find in another part of this book you will see that at the last fair there were 1,888 entries in the live stock department—a number corresponding with the year in which the fair was held. What significance this may bear the writer will not predict. Upon these entries \$6,175 was paid in premiums. The total number of entries for the fair was 3,648, upon which premiums in cash were paid amounting to \$7,195.

Now what of the fair of 1889? For this we cannot foretell, save that the same management will have it in charge and that the same liberal premiums will be offered, which certainly is enough to insure it the success it justly deserves.

MADISON COUNTY.

The twenty-first annual fair of our Joint Stock Agricultural Association was held on our grounds within the city limits of Anderson. The fair proved to be about an average for our County. All departments were represented—some moderately well. The domestic skill, as to culinary, was rather well represented. Our receipts of cash fell somewhat short of those of former years. The display of corn and wheat was light. Vegetables also light. The show of horses of various classes was considered good. On cattle, sheep and hogs only moderate. Corn, in this county, is selling now at 27 cents. Hay, \$15 per ton. Potatoes, 60 cents per bushel. Apples, 60 cents per bushel. On the whole, real estate has advanced in price from 10 per cent. to 20 per cent. The city of Anderson, in the last year, has secured the location of five large manufacturing establishments, with a capital amounting in the aggregate from \$375,000 to \$400,000, and has increased in population 1,500 to 2,000. Throughout the County we have thirty-one natural gas wells, which are adding daily to our wealth and population. Hogs are scarce and prices high. Cattle plenty and at fair prices. Wheat looks fair at this season of the year.

NEWTON COUNTY.

The tenth annual exhibition of our County Agricultural Association was held September 11 to 14, on the grounds of the society, located just outside the suburbs of the thriving and enterprising little village of Morocco.

The competition in the horse department was attractive and spirited, all classes being numerously represented, including French draft, Clyde, standard coach and general purpose. Notwithstanding the fact that awards were increased over last year, the exhibit of cattle fell off, being represented principally by the Polled Angus.

In the sheep department the exhibit was not large, but the quality good. Hampshiredown taking the lead.

The hog department was represented by the Poland China and Chester White, the former showing some very fine specimens. The poultry department was numerous and well represented.

The field and garden display was not large, but contained several excellent specimens. Art and floral halls were fairly represented as regards number of entries. Competition spirited.

The attendance was large, and after paying off all premiums in full we had left in the treasury a surplus of nearly eight hundred dollars. There seemed to be a feeling of congratulation on all hands that the fair had been so much of a success. Our little village of Morocco has, since this year's exhibition, been treated to the convenience and profit of the location and completion of a new branch railroad, so that now our farmers have abundant railroad facilities.

The farmers of Newton County have but lately awakened to the importance and economy of more thorough drainage, the legitimate fruits of which is that in the agricultural portion, the southern half of our county, we now have six extensive tile factories, their annual output not being nearly adequate to supply the home demand.

NOBLE COUNTY.

The Society held its thirty-third annual fair at Ligonier, September 11 to 14. The continued dry weather made it very unfavorable, the dust being almost unbearable. The new ground purchased and improved since the last fair was not entirely completed and the exhibition was not quite up to the expectation of the managers. The early date at which the fair was held was considered unfavorable, it being the busy season for farmers. The fair, however, was an average one. The live stock department, especially horses and cattle, was excellent, and brought forth expressions of delight and satisfaction from visitors. The agricultural and horticultural departments were rather light. The unfavorable season for such products made this inevitable.

The ladies' department, always an interesting feature of our fairs, surpassed in elegance and number any former effort. The handiwork of the ladies in art needle work and paintings was elegant, and the expressions of wonder and delight among the many visitors were numerous. The receipts enabled us to pay all premiums in full, expenses of fair, and leave a reasonable amount to apply on the improvements on our new grounds.

The sale of intoxicating liquors is prohibited and no gambling of any kind permitted.

The Society is in good working condition and promises many good things in the future.

POSEY COUNTY.

The thirtieth annual fair of the Posey County Agricultural Society was held on grounds belonging to the Society, one mile east of New Harmony, September 17 to 21. The receipts amounted to sixteen hundred and thirty-six dollars for admissions, and twenty-four hundred and fifty-four dollars for rents and percentages. Total, four thousand and ninety dollars. The amount paid for premiums, expenses and improvements was twenty-five hundred and eighty-nine dollars, leaving a net profit of fifteen hundred and eleven dollars.

The exhibition was fully up to former years. The display in all departments was good, and in many instances excelled former exhibitions.

The yield of wheat, oats, corn and potatoes, in this county, was enormous, wheat averaging twenty-five bushels per acre, while the fruit crop was better than for many years.

PULASKI COUNTY.

The Pulaski County Agricultural and Mechanical Association held no fair last year (1888). It was deemed expedient by the Board of Directors to hold over until another season, to give time to make some needed improvements upon the grounds, and also give the people to understand that stockholders of county fairs do not become rich all at once, but on the contrary are compelled to adopt the most rigid economy to make fairs self-sustaining.

Pulaski County is in the northwest part of the State, bounded on the east by Fulton, on the south by Cass, on the west by Jasper, and on the north by Starke County. The surface of the country is slightly rolling, about equally divided between prairie and timber lands, and has a diversity of soil which is adapted to the growing of all the cereals, grasses and Indian corn. For root crops and vines it is not surpassed in the State for productiveness. There has been great improvements the past year on farms, in the way of fencing, tiling and breaking the virgin soil; also in tree culture, both fruit and ornamental. The grade of stock is being improved from year to year in cattle, horses, hogs and sheep, and the people are endeavoring to keep step with her sister counties.

PORTER COUNTY.

The growing season of 1888 was marked for extremes, as to temperature, rain fall, and drouth, each period being a little over done for good results.

The early planting season was favorable, but was soon followed by an uncommon rain fall, injuring more or less many acres of corn and oats in low spots on flat surfaces.

On account of the heavy rain fall in so short a period of time, the drainage heretofore ample to protect the crops was insufficient to carry off the water and avoid injury.

The grass crop, and the season for securing the same, was all that could be desired.

The wheat crop was fair as to yield and quality, and was secured without much injury, but the oat crop, although fine and in excellent condition for harvesting, was visited by another excessive rain storm, and that portion earliest sown did not have sufficient time to cure before harvesting, and had more or less smutty heads, the grain when threshed being bleached and dusty. That portion not harvested was wasted by being beaten down and shelled off.

The corn crop was bountiful in yield and generally of excellent quality. A small per cent. was shriveled in sections covered by the excessive rains.

The period of plowing and seeding of wheat was laborious, indeed, the soil being so compact and lumpy—the effects of the heavy rains followed by drouth. That portion plowed early is in fair condition, but the soil plowed later seemed hard and lifeless, and the plant made a feeble growth.

We now come to the “Fair” season, the holiday of the husbandman, their wives, daughters, and the “boys.” A little season of rest before the fall work comes on, and an opportunity to exhibit the fruits of toil and care, to exchange greetings with those more distant and seldom met, to make new acquaintances, and learn new ideas and gain recreation and rest.

The Porter County Fair was a success in all respects—a season of enjoyment to the multitudes who came from far and near.

The exhibits came from all sections of this and adjoining counties, and also from other States.

PIKE COUNTY:

Our County Agricultural Society held its eighteenth annual fair, near Petersburg, from September 3 to 7, inclusive, and, for the first time in many years, failed to pay all of its premiums, repairs and expenses. As shown by our financial report our receipts were only \$2,895.35, while our expenses amounted to the sum of \$3,300. The attendance was not up to the standard, and it seems that our people are losing interest in our fair. I can only account for it in one way, viz.: That “travelling caravans” go from one fair to another with selected stock and articles, and our farmers have learned from past experience that they can not successfully compete against these professionals. There has been, up to this time, no complaint against the managers, and our Board of Directors are usually from our best farmers and from different parts of the county, but the premiums awarded to citizens of our county was not one-third of the amount paid by us, while at least ninety per cent. of the receipts came from them. I suppose this is so with other fairs. I hope that in a few years the policy will be to confine the premiums to county limits.

The year 1888 was a prosperous one to the farmers of Pike county. The yield of wheat was larger to the acre than ever before, and the quality was first class; the acreage was up to previous years. This is one of the best wheat-producing counties in the State, and has been for several years.

The corn crop was good, as it was in nearly all parts of the State, and our farmers have realized a much better price for it than was expected last September. Very few sold for less than 25 cents per bushel at the crib, but it is the opinion of

a great many that it is a mistake at all times for a farmer to sell his corn. It is insisted that he should feed it to stock and sell it that way. The most of the surplus corn sold in this county is raised on White river bottom land.

Potatoes and vegetables of all kinds were raised in abundance, and our fruit crop, which is our only uncertain crop, was immense, with peaches, pears, apples, etc., in abundance, and no sale for the surplus.

PARKE COUNTY.

The Indiana Agricultural Reports for 1887, also those of 1886, contain full descriptions of the county, its resources and industries, as well as detailed accounts of the Fair Society and its annual meetings of those years. To again present this descriptive matter would be uninteresting, and to review in detail the Ninth Annual Fair held August 20th-24th would be but to repeat accounts heretofore given. The uniform success of previous exhibits attended the last exhibition only in an increased degree. It is the policy of the management to be progressive, and so we are devising new plans and experimenting with methods to the end that we may attain the highest possible results consistent with our environment. Among other new features I may mention three, all of which gave results highly satisfactory. First, we doubled the amount of money spent in advertising; second, we trebled the amount of money in the speed ring; third, we made classes for pure bred draft horses and standard bred horses in addition to the three classes usually found in catalogues. During the coming year we expect to beautify our grounds and provide further for the comfort of both exhibitors and visitors.

RANDOLPH COUNTY.

The Eighteenth Annual Exhibition was held on our grounds one-half mile northwest of Winchester August 28th-31st. The Fair was considered one of the best ever held in the county, the largest number being in attendance on Thursday of any one day in the history of fairs in the county. We have one of the finest Fair Grounds in the State, containing twenty-one acres. In the north-east corner under a leafy grove is a beautiful mound with an elevation of six to ten feet, showing the work of an ancient race. Every department was well represented, and the weather was all that anyone could wish. Floral Hall was a fine exhibition of the skill, intelligence and taste of the ladies of our county, and the educational display could scarcely be excelled.

The display of horses and cattle was good, especially horses, showing the great interest that our people take in raising a finer and better grade.

The hog and sheep department were well represented with as fine specimens of porkers and fine wool as can be found in any other part of the State. The poultry show was considerably in advance of past years.

The total number of entries in all departments was the largest ever made in any single year. The agricultural was not quite equal to last year. The horticultural was creditable, but fell short of what it might have been, showing very

materially the lack of a good live and energetic Horticultural Society in our county. All things considered, it being a campaign year, our Fair was a success. About seven hundred dollars in improvements were put on the grounds this year. We paid our premiums in full, but left a small indebtedness on our building. The Society suffered a loss of \$400 during the summer by a large number of the stalls being burned.

Randolph county is one of the leading agricultural counties in the State, drained by White River in the center, Greensfork on the south, and the Mississinewa on the north, serving to make it in depth and richness of soil a county highly fitted for agricultural pursuits, and its spirited and industrious citizens grow an abundance of corn and wheat. Almost all the swamp lands have been thoroughly drained and put in the highest state of cultivation. Our farmers are fully up to the times in the way of farm machinery and all other improvements. We have at least ninety miles of railroad, two hundred miles of free turnpike, and Winchester, our county seat, being situated within the limits of a great gas belt, places it now in a state of rapid growth and development, so that we can really look forward to a bright future for Randolph county.

SPENCER COUNTY.

The third annual fair of the Spencer County Agricultural and Industrial Society was held at Chrisney, October 1 to 6. Notwithstanding the unfavorable weather, either raining or threatening to rain during most of the week, we had a good exhibit, and the attendance was tolerably fair, though neither were as large as former fairs have been.

The exhibit in the horse department was most excellent, would compare favorably with any fair in the State. Other departments were not so well represented as they would have been had the weather been favorable, though the result of the fair was very encouraging.

Through the influence of the fair quite an interest is manifested among farmers and stock raisers in regard to procuring good breeds of stock, and quite a number of thoroughbred horses were exhibited. Cattle are confined principally to the Jersey, Holstein and Short-horn breeds. We are behind in sheep raising, but produce annually immense numbers of hogs, principally Poland China and Berkshire. The ladies' department was very creditable, the more so as it was almost entirely home work, and reflected much credit to the skill, ingenuity and industry of the ladies of our county.

Spencer County is mainly agricultural, and in the southwest, which is low, level and very fertile, abundant crops of tobacco, wheat, corn, hay and potatoes are raised, these with oats, sugar cane and sweet potatoes are raised throughout the entire county. The northeast, along the Ohio River, is broken and hilly, and abounds in various fruits. The surface in many places is underlaid with an abundance of as good coal as is in the State.

SULLIVAN COUNTY.

Our annual fair was held September 10 to 15 inclusive, on new grounds one-half mile east of the town of Sullivan. The weather was fair and afforded an opportunity for visitors and exhibitors to attend. Both classes were there in creditable numbers; the latter made a very favorable display in quality, and while the number of people upon the grounds indicated a good attendance of visitors, the gate receipts fell short of any previous year. This is owing to the fact that over \$3,000 original stock and \$4,000 additional stock, divided in \$10 shares, each share representing a free ticket of admission for a man, his wife and all his children under twelve years of age, during the fair, accounts for the falling off of the gate receipts. The purchase of the new grounds, fifty acres for \$4,000, made it necessary to sell the additional stock. Fifteen hundred dollars have been paid on the new grounds, and improvements made to the amount of \$6,355.25, leaving a balance of \$2,500 yet to be paid on the land purchased. The improvements made are well-constructed and adapted to the purpose; the buildings are of late architectural designs, and the track for speeding horses is made in accordance with the rule adopted by the National Trotting Association. While the expenditures exceeded the amount of ready money in the hands of the treasurer for improvement \$3,527.81, over and above stock subscribed, it is believed that two or three good fairs will pay off the entire indebtedness. Moving the fair grounds caused an unfriendly feeling on the part of some, while others objected to the new ground from the fact that it made the distance one-fourth mile further from town. All of these objections had to be overcome, and at this time it is generally conceded that the executive committee did a wise thing in purchasing the new ground, where there is plenty of room, abundance of good water, buildings suitable for the purpose, sufficiently convenient for all to attend, and the fair a fixture for the future. Gambling and all kinds of intoxicants were excluded from our grounds, and so far as heard from no complaint has been made on account of the management. A beautiful elevation, from 75 to 100 feet in height, in the center of the grounds, tapering to a sharp point, with a well of inexhaustible water at the highest point, which, if pumped by a windmill, can be made to supply the entire grounds. Other wells have been dug to supply temporary wants, until the necessary piping is put in place. A new set of officers, mostly of energetic and enterprising men, have been elected to complete one of the finest locations for a fair grounds in the State of Indiana, or any other State. The old officers who have served from the organization of the present fair, retire wishing them success, and will aid in every way to make the new fair grounds a place of beauty; comfort and convenience for the advancement of the interests of the society.

Wheat, in parts of the county, was an entire failure, other parts a fair crop. Corn the best crop probably ever raised in the county. Hay a fair crop—price from \$7 to \$8 in meadow; baled and delivered, from \$0 to \$12, according to grade. In the eastern part of the county hog cholera took from 10 to 12 per cent. of the hogs. On account of the scarcity of feed last winter much of the young stock was sold, hence the farmers are short of stock this year to feed the surplus

corn. Vegetables, the past year, were the finest ever grown in the county. Every family was provided with a sufficient amount for their own use through the winter. The crop of apples and peaches was abundant. Every cellar full to overflowing at this time with as fine apples as the climate ever produced. The eastern part of the county is rapidly developing its coal resources, especially in Jackson and Cass Townships. Five hundred and nineteen men, including 439 miners proper and 70 outside workers, are now employed in mining. About three hundred thousand dollars have been invested in the works at Alum Cave; probably the same amount at Dugger, Buell, Lyenton and the Hancock and Konkle Mines, putting out thousands of bushels of coal every day. A new company has been organized to develop the coal at Old Pittsburg, and all of the stock subscribed by capitalists able to push the enterprise. The veins of coal in the neighborhood of Alum Cave are from 6 to 9 feet in thickness, of good quality for stove, furnace or gas coal. While the agricultural and stock interests are kept up, hundreds of our people are turning their attention to the development of our mineral wealth. We have a number of men engaged in breeding the different strains of thoroughbred horses, Short horns, Hereford, Polled Angus and dairy cattle.

The prospect for wheat for the next year is very fine and a good yield per acre, though the acreage sown is not as large as in former years. Stock cattle have required but little feed yet (January 5), and are generally in good condition. Stock hogs short one-half for spring feeders. An item of interest, I have overlooked, to the farming community, is the quantity of fire clay adapted to the manufacture of tile of a superior quality. Only one factory (at the county seat) is making this class of tile. Tile made from fire clay is pronounced by good farmers to be superior to ordinary clay tile, and can be made and put on the market for the same money, or nearly so. With our lands thoroughly tiled the products would be increased from one-third to one-half per acre.

STEBEN COUNTY.

The thirteenth annual fair of the Steuben County Agricultural Association was held on the grounds of the association at Angola September 19 to 21. For several years past we have held our fairs on the rainiest week in October. We have paid out every time, but our fairs have been attended with great discomfort to the management, exhibitors and patrons. This year the weather was very pleasant, yet the attendance was not so great as in some former years. This was principally owing to the fact that the exceedingly dry weather of August and early September had delayed seeding fully two weeks, and our fair caught the farmers in the midst of wheat-sowing. This also reduced the exhibit in some departments.

The display of horses was very full, and in heavy horses excellent in quality. In other departments of live stock the show was somewhat deficient. The entries in farm and garden products were about up to the average. The fruit display was very fine, although the apple crop of the county was below the average. Our Floral Hall was a blaze of beauty.

The income was not as great as in former years, yet sufficient to make the fair a success.

Our county is strictly agricultural, having no manufactories, except on a very small scale. The soil is so varied that almost every variety of product adapted to the climate is raised. We never have had a failure in all kinds of crops the same year, and rarely an entire failure of any one crop. For the past few years the methods of farming have been improving. A halt has been called in the waste of timber and fertilizers. Tile draining will in time compensate largely for denuding the land of timber and draining swamps. A few years of such improvement as is now going on will restore our lands to more than their original fertility.

SHELBY COUNTY.

The tabulated report of Shelby County shows a decided falling off in receipts compared with previous years. The reasons are numerous, the chief of which was the campaign, and the fact that our county was in such close proximity to that which held the candidate for presidential honors. Another cause which led to the disaster was the lack of enterprise in providing new "features" to interest those in attendance and to attract those who remained away.

It is being clearly demonstrated each year that fair associations are unable to bring the people together in numbers on the opening days of the fairs and hold them from day to day unless they provide new and novel attractions. The people have come to look upon fairs as sources of amusement as well as instruction and the exhibition of live stock. Agricultural and mechanical products do not excite the people (if we except the speed ring) as formerly, for the reason that advanced education causes them to read more, hence they are thoroughly cognizant of every improvement long before the time for holding the fair has arrived.

The recent discovery of natural gas in quantities in this county will undoubtedly be the means of bringing additional manufactories, and industries heretofore longed for will soon be within our borders. With every facility for shipping, every road in the county graveled, nearly every foot of land tillable, the finest water, best blue grass, and as good a climate as there is on God's earth, Shelby County will step to the front with renewed zeal next season, and hopes to show to her sister counties a fair greater than any heretofore given under our auspices.

TIPPECANOE COUNTY.

The oat crop was unusually large and of high grade. About an average of 53 bushels per acre.

The wheat crop was very light, not more than one-tenth of an average yield. Average per acre, 2 bushels.

The grass crop was fair, about an average with other years. Average, 2½ tons per acre.

The fruit crop was the largest and best ever known in the county.

The corn crop was very large and of best quality. Average, 60 bushels per acre.

Our farmers are all thrifty and the large amount of improvements throughout the county is an indication of an unusually prosperous year to our husbandmen.

TIPTON COUNTY.

The tenth annual exhibition of the Tipton County Fair Company was held on grounds near Tipton, beginning August 13 and continuing five days. The attendance was good and the gate receipts, while hardly satisfactory, were as much as was anticipated, owing to our very short wheat crop, which has been usually good. But the Company decided that they would pay all premiums in full and all exhibitors received their awards of premiums before they left the grounds, if they called for them. Our company has enjoyed prosperity and there has been a steady growth of exhibits from its organization, and this year was not an exception, showing an increase of exhibits over any former year. This society has never declared a dividend, and has put all profits into improvements. We had a number of exhibits from other States. Especially was this the case in the speed department.

The Company has always felt that they needed more stalls, and this year decided to build one hundred new ones, expecting to have an abundance, but to our surprise they were all taken and we were compelled to send horses away for want of room.

Our Society used the expert system and found it very satisfactory to all concerned.

Although our fair was held early in the season, all classes were well filled in agricultural hall, as well as in other departments. All awards of premiums were made on the third day and in the afternoon of second day, thereby affording the visitors a better opportunity of inspecting exhibits, which was a decided improvement over the old way of making awards the last day.

Tipton County is in the natural gas belt. Gas has been found in large quantities, and our county expects to reap great advantage from it.

VIGO COUNTY.

The fair given by this society for 1888 was a success, and for reasons the most popular in many years. The erection of a fine two-story exhibition hall, at a cost of \$6,000, first used for this fair, by its facilities for the handsome and convenient display of exhibits, contributed much to the general success.

In Vigo County, where are now several widely-known stock farms devoted to raising fine trotting stock, and where there is a constantly increasing supply of the better grades of horses, it is but natural that the leading interest at our fair should be in the horse-ring, where the display has been for the last few years large and very fine. The gradual improvement of the cattle in this county, and an increase in the number of cattle of the various popular breeds, was confirmed by the increased exhibit in the cattle department, which, with but little aid from neighboring counties, surpassed many previous exhibitions in number and variety. There was also an improvement in the swine and sheep classes, but in the poultry house, although the premiums had been nearly doubled, the display was but half of what it was the year before, ranking high in quality however. The falling off was due

probably to many breeders being short of fowls this season. A good year for most of the agricultural products was followed by the largest exhibit in the agricultural hall in many years, although the number of specimens of cereals was less than it ought to have been. Local pride and interest contributed to a superior display of mechanical wares, and filled the fine art and miscellaneous departments to overflowing.

The attendance reached the highest point yet attained, premiums as usual were paid in full, awards were satisfactory, visitors gratified, and the society found a balance in the treasury.

The result of the year's labor has been profitable to Vigo County, although by the failure of the wheat crop there are many instances of loss by individuals, for wheat has ranged from nothing to fifty per cent. of inferior grain. Corn was a good crop, but it has been larger. The overflow of bottom lands affected the yield of the richest lands. Oats, which promised a large return, were flattened by summer storms, and fell off in yield.

Vigo County is particularly adapted to gardening and small fruits, and its stretches of level, fertile prairie are showing annually an increased acreage in market gardening. Generally, this last season was very favorable, and very large shipments were made to distant markets. Farms, or gardens, devoted to small fruits and vegetables, many of them exclusively for the Chicago market, have for a series of years shown a very good average, and the result should lead to the extension of gardening in preference to certain lines of farming. The increased attention to raising horses and cattle will withdraw other acres from unprofitable farming in this county.

In preparation for the fair of 1889 this society will spend several thousand dollars, and barring the vicissitudes of seasons and weather confidently predicts the usual annual gain.

WARRICK COUNTY.

The annual fair of this county was held on the new grounds of the association, at Boonville. The exhibition was by far the finest ever seen in this locality, and one well calculated to stimulate the efforts of the managers for 1889.

The new grounds are within and adjoining the town, and easy of access by numerous streets. The improvements are all good, roomy, substantial buildings, well arranged for the purposes for which used. Many favorable comments were elicited from our patrons by reason of the beautiful location, large exhibition, and the general arrangement of our fair.

The crops of 1888 in this county were fair but hardly up to the average. Cloverseed and hay were most deficient—probably not more than one-quarter the usual crop. Corn did well, but suffered damage from wind and wet weather. The wheat crop will be less than half a million bushels in the county, and below the average. The Irish potato and sweet potato yields are unusually large, and will exceed 115,000 bushels of the former and 13,500 of the latter.

About an average crop of tobacco has been made—say three million pounds—and the prospect is for very low prices. Warrick is the largest tobacco producing

county in the State, and while standing high in many other productions, can not claim superiority. The general diversity, however, of her agricultural products, together with the usual good average yields, will commend her to any class of agriculturists. We are not limited to any one or two articles, but really do well with anything not requiring a tropical climate. The general health of the county is good; except in tradition, malaria is unknown. The county is well drained by the several creeks, and a thorough system of drains and ditches. As the demand for more farming land continues large bodies of land, heretofore considered wet, are opened up for agricultural purposes, and prove to be the most productive in the county. At present our railroad facilities are limited to but two roads in the county, but by 1890 we hope to see the construction of two, if not three, more. The Vincennes and Owensboro road is one of the most needed, and will open up a splendid coal and timber country. The dummy road from Evansville to Newburgh, now in course of construction, will be of great benefit to the western portion of the county, and in the near future may be extended to Boonville. Warrick county's live stock interests have been advanced in the past year, and a continual improvement is noted in the breeding of better classes of horses, cattle, sheep and swine.

WABASH COUNTY.

Our County Agricultural Society closed its first annual exhibition on its spacious new grounds September 4, with success inscribed on every banner. The new purchase of twenty-seven acres by the society is the finest ground of Northern Indiana. The entries exceeded anything in the past history of the society, and especially on horses. The interest seems to be on the increase, and everything seems indicative, now, of us being able soon to report to the State Board that grade horses are things of the past. Quite an interest is manifested among our farmers in raising good cattle, Shorthorns being in the lead, whilst there are several making starts on Hereford, Polled Angus, Holstein's and Jerseys. The Shorthorns are in the lead, and will no doubt remain there for many years to come. Swine—Poland China and Berkshire receive the most attention—all the other breeds are raised with more or less success. In our poultry hall the display was full of choice birds. Floral hall and art gallery was, as usual, full and overflowing with the handiwork of our artisans. Farm products of all kinds were of the choicest quality.

Our speed department this year was more attractive than ever. "Old Ringers" were shut out. Horses from a distance were here, and they came to win. During the past year we have made some very valuable improvements, having spent over \$5,000 in laying water mains forming a splendid water system. Floral hall and grand stand are monuments of beauty. Coupled to this are over three hundred horse and cattle stalls, all under patent roof, and nicely whitewashed.

Wabash County is rather rolling. From the southeast we have the Salimony River, emptying into the Wabash at its eastern borders, thence flowing through the center of the county, and to the west, leaving along its borders some of the finest farming land of the State. Eel River flows through our northern boundary, whilst on the south we have the classic waters of the Mississinewa, thus giving our

county the advantage of four river bottoms. It was originally covered with a dense growth of timber, except in the northwest part of the County, where small prairies and oak openings, and crystal lakes filled with fish are to be found. Walnut, cherry, poplar, hickory, beech, sugar tree and elm are our principal timbers. Farmers are engaged in putting in tile this season, which indicates that nothing pays so well as to have a thorough system of drainage.

The management congratulates itself that it is in good working order, and unites in saying that the present, as well as the past, success will serve to stimulate to renewed and greater exertions in the future to meet the requirements and pleasures of patrons and justly observing public.

ACTON DISTRICT.

The Acton District Fair Association held the 6th annual fair August 28 to 31, inclusive.

The weather was fine, and consequently we had a good attendance.

The business men of our county, who have always lent a helping hand, took hold with a determination to make the Acton Fair a success. With what result all of its patrons know. We paid premiums in full; paid off all accounts against the association, and had a neat little sum left.

The number of entries were nearly double those of last year; those in the stock department falling off some, but all other departments were filled to overflowing. The horticultural and woman's departments were the most attractive.

A noticeable feature of the fair was the special premiums offered by advertisers in our premium list, and candidates for county offices, all of which had lively competition.

The effect of our fair can be seen in our district, not only in improving stock and crops, but farms as well begin to have a thrifty appearance.

ARCADIA DISTRICT.

The Arcadia District Fair Association held its third annual fair at Arcadia, August 7 to 9, 1888. The weather was all that could be wished for, but the crowd was lacking. There were not as many persons in attendance during the three days as there should have been on any one day. The display was good enough, and a credit to any district fair, considering the circumstances in reference to the corn of 1887 and the wheat of 1888, neither of which were more than half crops. But there appears to be a lack of interest among the friends of agriculture throughout the vicinity of Arcadia, from what cause we have failed to learn. It may be partly owing to the fact that this was campaign year, or that there are four fairs held in this county annually, each of which have their friends and patrons. Among them are found some who desire to see all other fairs fail only the one they patronize. It appears as though there has been a growing prejudice against the Arcadia Fair for one or two years past, and for no good reason, as the agricultural

interests in the vicinity of Arcadia are in a prosperous condition. The farmers are bestowing more intelligent labor upon the business of farming than in previous years and continue to improve each year in the science of their profession. The corn crop of 1888 was remarkably good, the best ever known in this section of the country, and of fair quality. Wheat was not more than a half crop. Oats proved abundant, hay was good, and all saved in good order. There was also a good average crop of potatoes.

BRIDGETON UNION.

The Society held its Twenty-seventh Fair at Bridgeton, Parke county, August 20th-25th. The weather was fine the entire week, and the Fair was one of the best ever held by the Society. The show in all departments was very good. The horse rings were all well represented, general purpose horses taking the lead in numbers.

The cattle department was well filled, Short-horns predominating. The show in cattle was made by our home breeders, and was very creditable, there being some very fine animals shown. Sheep and hogs were well represented. The poultry show was very fine. Agricultural and vegetable halls were well filled with the finest specimens of the field and garden. The Women's Department was well filled, represented by various handiwork of different kinds. The show of flowers was especially good. The Horticultural Department was well filled with specimens of fruit of various kinds except peaches. The past year has been reasonably a successful one for the farmers of the district with the exception of the wheat crop. The crop of wheat was very light, and in some localities almost an entire failure, and what there was, of a very inferior quality, especially was this the case in Clay county.

The corn crop of the district was very good, the best on the clay land that has been for some years. The price of corn at present writing is as low as has been for several years. Oats good. Timothy, about an average crop. Clover nearly a failure on account of the drouth in the summer of 1887. Our young clover in the spring, and the very unfavorable weather of March, 1888, but very little seed saved. Potatoes, only a medium crop. No rye or barley raised to amount to anything in the district. The fruit crop was the best that we have had for a number of years, and of good quality, especially is this the case with apples. The abundant crop of this year will be the result of stimulating the farmers to make renewed efforts to recuperate their run-down orchards. There is a steady improvement going on in all of the various departments of farming and stock raising in the bounds of our district, more especially in introducing pure bred stock of the various breeds. Our Society tried the one judge system in some of the departments this year with entire success, and we think will adopt it more fully the coming year. The winter has been an exception so far, no cold weather, and at the present writing, January 3, 1889, bees are out in force, the buds are swelling on the trees, and sugar water is running freely.

FAIRMOUNT UNION.

The Fairmount Union, Joint Stock Agricultural Association, held its fifth annual meeting at Fairmont, September 24 to 28.

The exhibition was generally satisfactory to all concerned and in some departments it surpassed any of the former exhibitions of this enterprising society.

The entries in the horse department were many and embraced the various breeds commonly shown—the heavy draft breeds predominating.

The show of cattle was good and was constituted principally of Short Horns, Holsteins and Jerseys. The interest manifested in this department, both by exhibitors and visitors, was gratifying to the management.

The entries in sheep and hogs were fair, and embraced fine specimens in both classes.

The poultry department was a show of itself. Exhibitors were those who make a specialty of fancy breeds of birds in this district. There has been a great improvement in this industry in the past two years, and this part of the country is well supplied with good poultry.

The agricultural hall was filled to overflowing—an exhibition much larger and better than that of any previous fair, except that of wheat, which, while creditable, was selected from perhaps less than one-third of a crop. The display of small fruits, especially of grapes, in all manner of preservation, was large. The show of apples and pears demonstrates good interest and attention to this culture.

The purses offered in the speed department were earnestly contested and afforded some good races.

The floral hall was filled to its uttermost with needle work, fine art, etc. This exhibition was first-class in every respect, which fact gives evidence of the great interest the ladies of the district have in the fair.

The receipts of the fair were not so large as those of last year, chiefly because of the uncomfortably cold weather during the two last days of the exhibition. However, all premiums and purses were paid in full and a surplus of \$400 yet remains.

Expert judges were employed to award premiums in both the swine and poultry departments, which gave excellent satisfaction, and we hope to be able to secure such judges for other departments in the future.

No intoxicating liquors were sold on the ground, neither were any games of chance admitted.

The corn crop was excellent; the wheat crop, 25 to 33½ per cent.; hay and oats short, but of fair quality.

Hog cholera has not been prevalent during the last twelve months.

Our fair continues to stimulate the general farming interests of the community in which it is held.

FOUNTAIN, WARREN AND VERMILLION.

Our association held its 29th annual fair at Covington, September 24 to 28, 1888. To say that it was a success in every particular only feebly expresses the truth. The crowds that attended from day to day were enormous, and the receipts correspondingly large. The entries were the largest ever made in this district. The display of live-stock was not only large but magnificent, and no pains were spared by the managers to make the exhibitors and their exhibits as comfortable as possible under the crowded circumstances. Notwithstanding the extensive additions in the way of stall room that have been made on our grounds in the last few years, the entries in the stock line were so numerous that our facilities in that direction were wholly inadequate, and carpenters were busily engaged throughout the first three days erecting new accommodations.

The speed ring was never before patronized so liberally, nor the competition for first place so honestly and hotly contested. Some of the finest horses in Indiana and Illinois were entered; the racing was for blood, and the record of our ring was lowered.

The exhibition in the Floral Hall was superb. Although a large and commodious addition was made to it two years ago, yet it was crowded to its utmost capacity by our people, vieing with each other in making the finest display.

The display in the Agricultural Hall was in keeping with all the other departments of the fair, and showed our agricultural and mechanical industries to a splendid advantage. Everything considered, our last fair indicated that the development of our county in the year last past has been more general and substantial than in any previous year of its history, and to this fact we attribute the immense success of our last fair. Added to this we have, without any exception, the finest grounds in the State of Indiana. Arrangements have been made and contracts let for most extensive and expensive improvements, such as will place our association not only above the average, but second to no district in the State.

KNIGHTSTOWN UNION.

This fair has had a long career of success, broken only by an occasional failure, the last being the fair held the past year. In this the failure was only partial, there being a larger exhibition of goods and animals than ever before, but the attendance was small and the receipts correspondingly light. This was largely attributable to the order of the stockholders of the association cutting off the sale of family tickets. The state of agriculture in the district has been good during the year. The corn crop was large, and the wheat crop a good average. Oats were light and grass not very good. The potato crop was a partial failure. Fruits were abundant in general; strawberries moderate; raspberries and blackberries affected by drouth; cherries, plums, pears and peaches better than ordinarily, with the best apple crop since the freeze-out of 1880. The condition of the winter wheat crop is moderately good, the absence of snow injuring it somewhat.

The development of the gas field hereabouts has given something of a boom to real estate and all the industries, and bids fair to attract hither much capital from abroad. There are upwards of twenty-five producing gas wells in the district, with this city for the center, and farmers are sinking more for their private use.

LAWRENCE DISTRICT.

The annual fair was held at Lawrence, Marion County, September 4 to 7. The weather was fine; the exhibits, in point of variety, quantity and quality, were fully up to any previous year. The attendance was not as large as usual, owing, perhaps, to the intense political activity and the need of better and more ample accommodations. To remedy the latter it is proposed to purchase a forty acre tract lying along the Bee-Line railroad for future exhibitions. When this is accomplished we will have one of the most accessible and convenient sites in this part of the State. Our grounds are situated at Lawrence, on the Bee-Line railroad, nine miles northeast of Indianapolis, and are accessible to the people of Marion, Hancock, Hamilton and Madison counties. This is in the midst of a very fine farming country. To the east lie the rich, black land of Hancock County, which produces large crops of wheat, corn, oats, hay, etc.; to the north and west the diversified country along White River and Fall Creek, with its rich bottom lands and "Sugar flats" in a high state of cultivation, and to the south an undulating region adapted to a large range of crops. The lower lying lands of this entire country are of black loam, very rich, and easily tilled. The uplands are of yellow clay. The latter, where properly managed, is proving to be our most profitable land. It is most excellent for fruit, growing fine healthy trees and vines, which withstand our sudden climatic changes, and as they bloom later in the spring, there is less liability to damage by late frosts. We are also blessed with that incomparable gift of nature, natural gas. Enough of our territory has been developed to show that natural gas underlies the whole of this region. When we take into consideration the fine farming and fruit lands, the nearness to market, the assurance of natural gas as a fuel and light, and the moderate price of real estate, we think that this part of the country offers many inducements for the investment of capital. The Bee-Line, the I., B. & W., and the L. E. & W. railroads cross this territory, affording rare means for shipment and travel. The villages situated on these furnish good sites for manufacturing. This is also noted as a healthy locality. Being the summit of this part of the State cases of malarial sickness are rare, and seldom fatal.

LOGOOTEETEE DISTRICT.

The Logootee District Fair Association represents the Counties of Martin, Daviess, Dubois and Greene, of this district. The agricultural interests are gradually improving each year. We have a great variety of soil that is adapted to all agricultural products of which our climate will admit.

We have in this region a great diversity in the character of the lands, ranging from very wet, low lands to the highest and driest of uplands.

Our farmers are making rapid progress in the science of agriculture, and as time advances, are gaining rapidly in practical knowledge of the wants and capabilities of the different localities, and are thus enabled to make the very best of all natural advantages at their command.

Hence, a careful observer can not fail to be favorably impressed with the great improvement observable on every hand in the management and cultivation of the farms in general.

This very satisfactory state of affairs has been brought about in a large measure by the influence of agricultural societies and agricultural papers. But while the above is true, as a rule, it is a deplorable fact that there are a few "Old Foggy" farmers who are still in the ruts, and are unwilling to give the agricultural societies any support, except a paltry 25-cent. admission fee, and that in a grudging manner. It is a matter of fact, however, that this class is growing beautifully less every year, and we believe that it will be only a question of time when they will be completely eliminated from the lists, and known only in the history of the past.

Our association has been in successful operation for fifteen years, and we have splendid grounds, as fine perhaps as there are in the State.

Our two last exhibitions were as good, or better, than any held previous to that time, but were not so successful financially.

In the way of fine stock, the greatest improvement noticeable is in horses. Next in order come cattle, hogs and sheep.

Great improvement is observable in farm buildings, farm implements, and manner of cultivating the soil. What we now need to make our district one of the grandest and most desirable in the United States, is for every farmer to study the business as mechanics, merchants and professional men study theirs. When this is done, farming will become one of the most successful, pleasant and profitable occupations under the sun, especially will this be the case in a region blessed with such natural advantages as ours.

MIAMI AND FULTON.

This society held their sixth annual fair on grounds one-half mile west of the town of Macy, Miami County, from September 28 to 29 inclusive.

The exhibit in every department was good, the number of entries exceeding any former year by about one hundred.

Our show of horses was an improvement on any previous year; a few more in number and general quality excellent.

Cattle was an improvement on former years.

Of sheep the exhibit was very good, and a fair representation of the sheep interest of this section, yet there is not the attention given to sheep husbandary that might be made profitable to the flock master.

Hogs were good in quality, and about the same in number as last year.

Financially our fair was not the success we had hoped for. The weather being quite unfavorable, raining the first two days, clearing up too cool for outdoor comfort the last days, yet we can pay the expenses and premiums in full and have a small amount left to apply on the improvement account.

The past year has been another very dry one, but being quite cool through the latter part of the corn season, this crop was not injured so much by the drought as it was the previous year, yet the cool weather retarded the ripening so much that the quality is below an average, the yield however being good.

Wheat was a poor crop, both as to yield and quality, many fields being plowed up for other crops.

Oats a good crop, both in yield and quality. Potatoes good, especially on low lands. Hay crop very light, many of the clover fields being killed by last winter's hard freezing. Fruit a fair crop.

Taking crops and prices together, this is a fairly prosperous year to our farmers. There being more attention given to improved stock, and a good many of our farmers are finding that by a little extra care and feeding that the same kind of stock can be turned much quicker and to more profit, or that the live stock on the farm is simply a condensing machine that must be run to its full capacity to make it pay.

NORTHEASTERN INDIANA.

The seventeenth annual fair of the Northeastern Indiana Agricultural Association was held at Waterloo, September 24 to 28, 1888. Owing to the change of time for holding our fair from the first week in October to the last week in September (in order not to conflict with other fairs near us) fate has been against us this year in the way of very inclement weather during Thursday and Friday. However, we had a very good attendance. Entries in nearly all departments were equally full compared with past years. The horse and cattle show was excellent. The poultry department was filled to overflowing, and the same may be said of fine arts, textile fabrics and needle work, there being 1,050 entries, showing a marked increase in the number of articles as well as quality.

The show of sheep was very good, there being 95 entries in all the quality of fine wool and excellent mutton sheep on exhibition, shows that breeders are alive to their best interests in this department. The swine department was not filled as it has been in former years, the exhibit being wholly made up by home breeders, however, in point of excellence, the show was fine. In horticultural and domestic skill the interest seems to increase with each year. Field and garden products, in consequence of the drouth, were not up to the standard in quality. The speed department was filled, as usual, with good horses. The association paid in speed premiums alone \$656.50.

The usual amount of machinery and farming implements, wagons, buggies, and sleighs were on exhibition, making a very nice display in this department.

All things considered, the fair of 1888 was a decided success, the total receipts being \$3,286.55. After paying the usual running expenses and all premiums awarded on articles and animals enumerated in our list, we were able to place to the credit of the association \$487.08.

Crops in this county, as a general rule, have yielded satisfactorily. Corn was considerable better than in 1887; wheat below the average, with oats a fair yield.

Potato vines were somewhat damaged by dry weather, the yield, however, was sufficient for home use and the quality very good. The apple crop fell far short of 1887. Instead of the immense surplus usually shipped from this county we had just about sufficient to supply the home demand.

In conclusion, I will say that the indications at this time are fully as good as they have been for several years past, and we hope, by a united effort in 1889, to be able to report to your honorable body a better exhibition in many respects and a greater financial success.

NORTH MANCHESTER TRI-COUNTY.

The fair of the North Manchester Tri-County Agricultural Association was one long to be remembered on account of its success financially and otherwise. The past year being one of intense political excitement, it was extremely difficult to get even the agriculturists interested in fair matters to warrant managers in promising to patrons and exhibitors that their meetings would be up to the standard of former years. Notwithstanding all these difficulties, I have to report that the meeting of our association from October 2 to 5 was successful beyond our most sanguine expectations. The number and quality of horses on exhibition was in many classes equal, if not superior, to any fair heretofore held. In the draft classes the Clydesdale and Percherons divided the honors about equally. Some fine specimens of Belgians and Shires were also on exhibition, and were well up in quality. The general-purpose and light-harness classes were good, and a very marked improvement was shown, especially in young animals.

In cattle we had a grand exhibit of Shorthorns, which in quality, I think, could not be excelled by any exhibition in the State. We had also a very good show of Holsteins and Jerseys, and last, but not least, an excellent show of grades. In this class one can readily see the advantage that is derived from agricultural societies by our farmers. In recent years the improvement in live stock throughout the country has been marvelous.

The display of farm products, I am sorry to say, was not up to the usual standard in quantity, but was very satisfactory in quality. Agricultural machinery and implements of all kinds were represented, and made a grand display. Hog, sheep and poultry departments were more than usually full, and of excellent quality. On the whole it was one of the best fairs held by the association.

This year the society adopted the expert system of judging stock, and in the horse, cattle, hog and poultry departments found it exceedingly satisfactory, both to the society and exhibitors, there being less complaint than was usually manifest under the committee system, and I hope to see the system of expert judging adopted generally at district and county fairs in the near future, believing it is necessary to the prosperity of the associations.

The association owns twenty-six acres of land within the corporate limits of North Manchester, Wabash County, and has a good amphitheater, race track, floral hall, agricultural hall, stables, etc., and is located in an excellent farming country, the Eel River bottoms being sand and gravel loam, and very productive.

The principal grains raised are corn, wheat, oats and clover. The principal fertilizers used are clover and barn-yard manure, and more care is being taken with each succeeding year to maintain the fertility of the soil.

NORTH SALEM DISTRICT.

In the month of October, 1885, a few farmers of Eel River Township met together and resolved to have an exhibition of their farm products. Accordingly a day was set and a display of fruits, vegetables and other farm products was made, which would have done credit to many a county fair where premiums were given. This was the beginning of the *North Salem Fair Association*. In September, 1886, two days were set apart and a small admission was charged. This was so successful that a stock company was organized, which made arrangements for a regular fair to be held the following year. It then ceased to be a local affair; but interest and shares were taken all over Hendricks County. About thirty acres of ground were leased, a half-mile track was made and the necessary buildings were erected. About nine hundred entries were made and all premiums paid.

The fourth annual session was held during the week commencing with the third of September, 1888. Entries in all departments were full. The special features were the ladies' department and the horse display. The best record in the races was made in the free-for-all pace, time 2:27. The number of entries was about fourteen hundred. All premiums and expenses were paid in full, and the prospects are bright for another and equally successful fair next year.

Among the things which have contributed to the success of the North Salem fair, its location in one of the leading counties has added most. Hendricks County is situated near the center of the State. Its surface is broken by many hills, yet not so uneven as to interfere with raising crops. It is well drained, and the water courses are more evenly distributed than in any of the adjoining counties. The leading characteristic of the county is its blue grass pastures. Owing to this fact it has become the principal cattle raising county in the State. The breeding of fine horses has lately become an interesting feature in the prosperity of the county.

The last wheat crop was almost a total failure in the northern part and but little better in the southern. While the wheat was so nearly a failure, the corn crop was the heaviest known for years, both in quantity and in quality.

ORLEANS DISTRICT.

The last fair was almost a complete failure financially and otherwise. What show there was of stock and other articles was first class, but there was not enough except in a few popular horse rings. The attendance was the smallest that we have ever had. As we do not charge entry fees, but depend on gate and privilege receipts entirely, we would have failed completely but for a good balance from last year. A county convention at our county seat and two political rallies in the near neighborhood during the progress of the fair doubtless kept many from attending.

The farmers of this district have in a measure recovered from the great losses sustained by them in the almost total loss of their crops by the severe drought of last year. In consequence of such losses there has been much less improvement in dwelling houses and other farm buildings during the past summer and fall than usual, but farmers have worked hard to replenish their empty granaries and hay mows. The present year has been noted for the fine crops of all cereals, grasses, vegetables and fruits, for the number and healthy condition of all farm animals, and for the number fitted for market. The remarkably fine crop of wheat harvested this year and the fair prices realized for it stimulated farmers to put in a much larger area the past fall. Nearly all of them used commercial fertilizers liberally in drilling, which gave the young plants a fine start, but at this time all early sown wheat in this locality is very badly injured by the Hessian fly.

Owing to the very low prices paid for cattle for the past two years many farmers are not giving that industry the attention that it deserves, while sheep raising has been gradually declining for several years, I think more on account of ravages of dogs than for any other cause, for certainly our uplands and dry ridges are peculiarly adapted to the raising of sheep in large numbers as cheaply, perhaps, as any locality in the State.

PLAINFIELD DISTRICT.

This society held its fair in the grove near Plainfield, August 23. The day was quite pleasant, and accommodations good. The horse show was the leading feature of the fair, all breeds and classes were filled and some of the best in the State were on the grounds. The crowd was large and orderly; the feeling of the patrons was that it should have been for more days. The stock in this county is of the very best blood in the market. Quite a number of our horsemen have purchased some excellent strains of the horse, and the cattle men are quite up with the demands. But few sheep are kept, and hogs are short in supply. All our stock are healthy and in good condition for the winter.

Our corn crop was an unusually good one, the average acreage was sixty bushels, many fields making 100 bushels per acre, and of good quality. Wheat was a failure, making about three bushels per acre of the cut portion, and many fields were not cut at all. The growing wheat bids fair for a better crop. Oats good and a fair crop. Timothy very poor, and clover was an entire failure. Potatoes an average crop. Many forest trees died during the summer, supposed to be chargeable to the drouth.

The farmers are putting up many miles of patent fence of various kinds. Some excellent buildings have been erected, and many have been well painted, showing thrift among our citizens. The stock law is but little heeded, for want of men who will enforce it.

NORTHERN INDIANA AND SOUTHERN MICHIGAN.

The seventh annual fair of the Association was held on grounds midway between the cities of South Bend and Mishawaka, September 10 to 14 inclusive. The exhibits in all departments excelled those of former years. Our attendance was large, and the interest our people take increases from year to year. Our home manufactures add much in their own buildings well filled with their line of goods. In fact, "Manufacturers' Row" is one of our special attractions. In our educational department great interest is taken, and under the supervision of our County Superintendent, proves both interesting and instructive. Several permanent improvements have been added the past year. The one that gave the most satisfaction was a tank holding 300 barrels on an eighteen foot derrick. This was filled by a steam pump. We used a street sprinkler, and found no trouble in keeping the dust down over our track and grounds. All fair managers know what this means to their patrons. The past season has been one of extreme drought again—the third in succession—and farmers on our sandy soils are becoming discouraged. All crops, excepting on low grounds, are much below the average.

RUSH AND SHELBY.

Our Fourth Annual Fair (second under the present organization) was held near Manilla, Ind., August 14th to 18th inclusive.

The exhibits for this year were highly satisfactory, although in some departments, in point of numbers, perhaps, the entries were not quite up to that of last year. There was quite a perceptible improvement in quality, especially is this true of horses and cattle, showing that the process of "weeding" is going on.

The heavy draft pure bred horses were represented by three breeds: Percheron, Clydesdale and English Shire, nearly all imported, and very fine specimens of their respective breeds. In fact the entire exhibit was creditable to all the breeds, for which this region is famous.

Two breeds of cattle were shown, there being five breeders of Short-horn and one of the Holstein Friesian. Some of these were as good specimens as can be found in this part of the State. The abundant crops and large yields of fruits of the year 1888 produced a very noticeable effect on the Agricultural and Horticultural Departments, and the displays were fine of both the professional and amateur exhibitors.

The poultry department is always a prominent feature of the Fair, and why should it not be when the Shelby county fanciers take the lead in the State, as the Rush county horse breeders do in their line.

Some splendid displays were made in the mechanical department.

The fine art and miscellaneous department produced a fair show, this being the first year since the new Floral Hall was erected.

The awards of the Society were by the "one judge system" mostly, and experts were secured for the different departments. Among them were F. M. McMillan on horses, John McCaslin and S. A. Dungan on cattle, D. L. Thomas on swine, I. N. Barker on poultry, and H. B. Lucas on horticultural products.

Since the report one year ago the grounds of the society have been enlarged, and a one-fourth mile track made for showing horses in harness; at least one hundred and fifty new stalls erected, Floral Hall built, water piped to the grounds, and various other improvements made for the convenience of the Society and the comfort and pleasure of its patrons.

The grounds are in the center of a region, nearly level, "the flood tide" of the glacial drift, and bids fair to be one of the best agricultural sections in this or any other State.

A great many of the farms are what were once "Bur Oak Swamps," which, after being thoroughly underdrained, will, with proper care, be productive for ages. Such lands will eventually, with the enterprise of man, produce good roads, commodious buildings, raise fine stock—in short, bring all the comforts of civilized life.

ROCKPORT DISTRICT.

The Spencer County Fair Association held the second annual fair on grounds adjoining the town of Rockport, from September 3 to 8, inclusive.

The grounds of the society, containing thirty acres, are well located and abundantly supplied with water by a main from the Rockport Water Works Company. Fifteen acres on the south side of the grounds are covered with native forest trees—beech, oak, ash, and sugar trees. Five acres of forest trees have been set out on the north side of the grounds. The half-mile track is located in the north half of the grounds in a small valley, the ground gradually raising on both sides, giving a good view of the track from all parts of the grounds. Inside of the ground, inclosed by the track, is a lake of three acres. Water stands six feet deep in some parts of the same. The grand stand is a substantial two-story building, 60x110 feet. The second story has a seating capacity of 1,500 persons, leaving a room on the south side of the building 14x110 feet, cut off by a slat partition, which is used by the Women's Department. The ground floor, 60x110 feet, is used for displaying agricultural and horticultural products, leaving room on the north side for refreshment booths.

There are two hundred stalls on the grounds. The society has spent six thousand dollars in improvements on the grounds.

The receipts were not as large this year as was anticipated, on account of the heavy rain on Friday and Saturday, but after paying expenses and premiums in full, there was a surplus to apply on indebtedness of over three hundred dollars. The farmer has had a bountiful yield in Spencer County this year. Wheat and oats better than for years. Corn, a good yield, but damaged at least 15 per cent. by wind and wet weather. Hay, a little light. Large crops of potatoes and tobacco, with prices so low as to hardly pay cost of production. Methods of farming are improving. The latest improved farm machinery is used. Some farmers

use fertilizers largely, but clover is relied on mainly for keeping up the productivity of the soil, on the hill lands, and clover seed is one of the money crops of the farmer. Cattle and horses are being greatly improved. Hogs, not so many raised as formerly, but all are of good breed. The sheep industry is on the decline.

Land in the lower end of the county, that was called swamp land ten years ago, is fast being drained, and where fever and ague was a yearly visitor, is now regarded healthy. Where the farmer used to cultivate his ridges on his forty acre tract, now has the whole of it in a high state of cultivation.

URMEYVILLE.

The tenth annual fair of this association was held October 4 to 7 inclusive. Owing to the unfavorable weather the two first days our gate receipts were small compared with our preceding fair. However, we had a sufficient amount to pay all premiums with a balance left in the treasury.

All departments were fairly represented. The corn and general agricultural exhibits far exceeded that of any former fair in the history of the association. It was simply immense; but this is only the outcroppings of the laws of "cause and effect," as the autumn of 1888 will long be remembered in the county as yielding the richest and most abundant harvests in all grains and vegetables (known to our climate and soil) in her former history. To give a full history of our resources as a county, our educational and manufacturing advantages, would be but a repetition of former reports.

Permit us, however, to say, in conclusion, that the three starch works in our county (two at Franklin and one at Edinburg) have already bought of our farmers over three hundred and fifty thousand bushels of corn at better prices than is realized and enjoyed by farmers at most any other locality in the State.

WARREN TRI-COUNTY.

Our fifth annual exhibition was held from September 4 to 8, inclusive. As usual, the society was well patronized, and in every way successful, the gross receipts however, were not quite so large as in some former years. This failure, however, is accounted for by the almost total failure of the wheat crop in this section of the State. The ground, also, was exceedingly dry, and the farmers could not plow and prepare the soil for putting in wheat, all of which had a depressing effect upon the spirits of the people. Notwithstanding this, the receipts were sufficient to pay all expenses and the premiums in full and leave a small surplus in the treasury.

The exhibition in nearly every department was larger than ever before. The horse department was very full. The stalls, which number some three hundred, were inadequate, and many had to be provided with quarters outside the grounds. The different breeds of the draft horse, the general-purpose horse, in fact, every class in the department was well represented. The cattle department was good,

embracing Short-horns, Herfords, Polled Angus, and Jerseys. A very lively contest was waged between the Short-horns and Herfords, the honors were divided. The show of hogs was excellent, and all of the classes were well filled. The sheep department is increasing in interest, and gives promise of considerable growth in this section of the State. Shropshires and Cotswolds seem to be in the lead, a number of fine specimens of both varieties were on exhibition. The poultry interest was well represented, and is in a promising condition. The agricultural, floral, art, domestic, mechanical and miscellaneous departments were all well filled.

The stockholders, officers and patrons of the society manifest much interest, and the enthusiastic good-will and support hitherto given promises to continue. Some improvements have been made, notably, a well has been drilled into bed rock, and an abundant supply of the purest water obtained, which is conveyed to different parts of the grounds by means of underground pipes.

The district is composed of the counties of Huntington, Grant and Wells, and its grounds are at Warren, which is located on the Toledo, St. Louis & Kansas City Railroad.

XENIA UNION.

The seventeenth annual exhibition of our district agricultural society was held on grounds adjacent to the town of Xenia, Miami County, Indiana, from August 21 to 24. The weather was fine during the whole time, but the roads were very dusty. The exhibits were up to those of former years, on an average. The stock department was above an average, while the agricultural display was poor, owing to the early season of the year. Our attendance was not as good as in former years, which we attribute to the scarcity of money, caused by our short wheat crop and the political campaign, which is always a poor year for fairs. In consequence we were unable to pay our premiums in full. Our society is situated in an agricultural district and we have to depend upon the country for our patronage; therefore, when they fail to attend our receipts are short. However, we are not discouraged, and will renew our efforts for the coming year.

The year just closing has been under, rather than over an average one to our farmers. The cold weather of last winter froze out the wheat and clover so badly that both were almost a failure, and a great many farmers were compelled to sell their cattle for stockers owing to the short pastures, and as the price was very low, very little was realized from sales. Our corn crop was rather above the average in quantity, and with a large breadth planted we have a very large crop. While the price is below that of other years it will yield quite an amount in the aggregate to our farmers, and those of us who are fortunate enough to have hogs to feed will profit largely in that way, as hogs have commanded a good price all year.

There has been a large breadth of wheat sown this fall, which is looking well at this time, and if the weather still continues favorable, we will in all probability have a good wheat crop in 1889.

Our town and county is still improving very rapidly since the discovery of natural gas. The town of Xenia has increased her population at least one-fourth in the past two years. The country is also improving. Land is increasing in

value, and now ranges from \$40 to \$75 per acre. We have in Xenia, and within a radius of five miles of town, not less than fifteen gas wells of great capacity, and gas is transported by pipe lines to Peru and Wabash from this field. If our farmers would only realize their advantages and not lease their land to syndicates, which will reap the benefits of the wealth buried in the ground, we might ere long have a manufacturing as well as an agricultural district.

SWITZERLAND AND OHIO.

The fair in this district was not up to the usual standard of excellence, still the exhibition was good, and all departments were well filled. There were over 1,200 entries in the aggregate, and about the usual interest manifested in the contests for premiums. Yet there was a falling off in attendance, which we can easily account for. The centennials, expositions, re-unions, political meetings, etc., were all around us. The cut rates on railroads and steamboats made traveling about as cheap as staying at home. Our people availed themselves of the opportunity to go sight-seeing and pleasure-seeking, they were in a manner surfeited with these things. And then the busy season with farmers was at hand. Corn blown down, and to be cared for; tobacco cutting, and fall seeding. The result was we had but one big day in point of attendance, and the society paid more in cash premiums than her entire gate receipts; this with the running expenses of the fair, and some improvement on the grounds, left our treasury in a somewhat depleted condition. But with all demands paid, and credit good, we are reasonably happy, if not wealthy, and consider ourselves lucky that we succeeded so well under such adverse circumstances.

As regards the condition of agriculture in this district, we have but little to say as to change or improvement. Our crops for the year 1888, taken as a whole, were about an average for this locality. The wheat crop was, perhaps, the largest and best we ever raised. Clover a good crop. Hay light, owing to dry weather in May and June; not more than two-thirds of an average crop. The same cause cut short the early planted potatoes, while the Colorado beetles devastated those planted later, thus the crop was cut short at both ends, and the market price so low for the few that grew between, that the farmer who had any surplus wished he could eat them all. The corn crop was doubtless the largest ever raised in this district; it was somewhat damaged by being blow down and by high water along the streams and on low bottoms in October and November. The tobacco crop was much the largest ever grown in this country, of variable quality; some very fine; some fair; some frosted; the crop at good prices would probably bring more money into Switzerland County this year than any other article of export. Fruit of every kind, grown in our latitude, was very abundant; never better. Pastures have been good most of the season, and stock is looking well for this season of the year. Cattle low in price. Hogs in demand at fair prices.

About the usual acreage of wheat sown last fall, looking very well at this time. Very little winter weather yet (Jan. 1, 1889); no snow and but little freezing. Now, as regards system in farming, the ways and means and methods employed, we would say nothing disparagingly of the farmers' tactics in general, as

we, our self, have been no great success in this calling. Yet we must admit that very many of our farmers carry on their business in a sort of haphazard way that would not make a success in any other business. No lack of industry, if that means hard work, but relying almost exclusively on their muscle for results, they fail to bring brain power into requisition hardly at all. We might illustrate with farmer Jones, who, year before last, raised a good corn crop on an old pasture field of thin upland. Elated with his success, and believing what has been done can be done again, he planted that same field in corn again last year, but owing, as he supposed, to the weather, or the moon, or some other conditions not well understood, the crop did not meet his expectations; on the contrary, was very light; but thinking that in the cycles of time the favorable conditions would likely ensue, he planted that field in corn again this year and received for his labor and pains a little fodder and a few nubbins. He now believes neighbor Smith's philosophy—that the same crop on the same ground, year after year, will not succeed, but that rotation of crops and the liberal use of clover stable manure, or other fertilizers are the conditions essential (with proper cultivation) to successful farming. We often hear the remark, "Farming don't pay," "There is no money in it." We have been impressed that there is much truth in the statement in very many instances. But the "why" that some make a success of farming while others make failures (the soil, climate and conditions being the same) we only account for in the intelligent methods made use of in prosecuting the business. Real estate has depreciated in value for some years past. It has probably reached its greatest declination, and will likely enhance in value the more rapidly as the farmer comes to a better understanding of what is needed to make farming a success; and as agriculture is the basis or foundation on which we build, it being progressive and successful, we know that the trades and other lines of business will be booming, and all our people prosperous and happy in the near future.

EASTERN INDIANA.

The sixth annual fair of the Eastern Indiana Agricultural Association was held on the grounds of the association at Kendallville, commencing October 1 and continuing five days. The success attained in former years was well sustained this year, and, in fact, in many departments the display excelled all previous exhibitions. It was pleasing to notice that exhibitors in nearly every department made extra exertions to have their exhibits better and more deserving than on former occasions. The entries were large in all the classes, particularly so in the horse department. Some idea of the number of horses on exhibition may be observed by noting the fact that when the single horses in the roadster class were called for examination over twenty horses were produced, and again there were thirty-eight entries of suckling colts in the general-purpose class. In the show ring for horses were some exceedingly fine full-blooded imported Normans, Clydesdales, English Draft, English Coach and Hambletonians, besides many other excellent horses not imported. This department of the exhibition attracted a large number of farmers

and others interested in horse-raising, and all seemed delighted. The show of cattle was excellent, and embraced nearly all of the choice breeds raised in this country. It also attracted much attention and satisfaction among the stock raisers. The entries in the sheep and swine departments were very fine, though possibly not so large as the previous year. The poultry exhibit was good, and pleased everybody interested in this kind of display. The display of agricultural products was never so complete or attractive, and provoked much favorable comment. The superintendent in this department was particularly fortunate in securing the assistance of a corps of competent ladies, who arranged everything in a beautiful and artistic manner. In Floral Hall, where the ladies had exclusive control, was reserved a view for the sight-seer which will not soon be forgotten. The exhibits here have always been splendid, but on this occasion it seemed to so far excel all former efforts as to call forth countless expressions of approval and delight. The entries were more numerous, the quality better and the arrangement much more pleasing to the eye. Too much credit can not be given the ladies for their untiring efforts. Machinery Hall, one hundred and forty feet in length, with line shaft in center, was filled to its utmost capacity, with machinery in motion on either side, presenting an animated scene and attracting crowds of eager sight-seers bent on examining the operation of the various kinds of farm implements. The speed department was fully up to the standard in both the character and number of contestants. Honest trials of speed by some of the finest and fastest horses known were witnessed each afternoon. No pool-selling was allowed, and betting and bluster usual on such occasions was confined to a remarkably small number. The grand parade of live stock on Friday forenoon was anxiously looked for, and was witnessed by a very large number of people. It was a grand spectacle, and completely encircled the half-mile race course. The receipts of the fair were larger than on any previous year, and after all premiums, purses and expenses were paid there remained a sufficient amount in the treasury to warrant the directors in declaring a dividend of twenty-five per cent. on the capital stock and still have a few hundred dollars left for improvements and contingencies. This dividend has been paid and the best feeling prevails among all interested, and the greatest confidence in the future prosperity of the fair is felt by all who are posted as to the condition of the association.

WAYNE, HENRY AND RANDOLPH.

Our ninth annual fair was held at Dalton, Wayne County, September 11 to 14. Owing to the principles involved and the energetic work of the Board and officers this fair has won the reputation of being one of the best in Eastern Indiana. The number of entries of live stock, except in the sheep department, were not so large as the fair previous, still there was quite a fair representation in all departments. Agricultural Hall was a leading feature, as all classes in that department were well filled. A new and very attractive feature was "old settlers' and children's day." Quite a number of old settlers were present to entertain the young and rising generation in relating old time stories, displaying old relics, baking

Johnny cakes, spinning, breaking and skutching flax after the old style, and other attractions in an old-fashioned log cabin erected on the grounds contributed to the enjoyment of the day. Notwithstanding this being campaign year the attendance was good. While the receipts were a little short of last year the attendance was nearer equal each day. Such interest was manifested by the exhibitors and others that stock has been subscribed to make up the deficiency. The wheat crop exceeded that of 1887 in number of bushels, but the quality was not so good in some localities; price from 60 cents to \$1 per bushel. The corn crop far exceeded that of 1887 in quantity and quality, some fields yielding from 75 to 80 bushels per acre. Oats an average crop in acreage, but beat down and in bad shape to harvest. Fruits, such as apples, peaches, pears and cherries, were plentiful and of good quality.

The number of hogs marketed and the price paid (\$4 to \$5 per cwt.) very much encouraged the farmer. Not much loss by cholera in this locality. Cattle of a good quality, but the price very low, the principal breeds being Shorthorns and Jerseys. Sheep raising is a growing industry, but not extensively engaged in at present. Hay crop very light and price high, causing the farmers to harvest corn fodder and house straw.

Much attention is paid by farmers to repairing and painting buildings, fences, etc. A new fence known as the "wild cat" is taking the place of the old "worm" fence, while a great deal of wire and slat is used.

Mixed farming predominates, while much attention is paid to grazing. Tile draining and ditching wet lands is very much improving the looks and productiveness of our farms. Gravel roads are being made free pikes, and are kept in good condition.

EXHIBIT OF AGRICULTURAL SOCIETIES OF INDIANA, 1888.

NAME OF SOCIETY.	PRESIDENT.	ADDRESS.	SECRETARY.	ADDRESS.
Decatur	J. N. Davidson	Whitesville		Indianapolis.
Dubois	John M. Ball	Lebanon		Lebanon.
Elkhart	W. D. Pratt	Logansport		Logansport.
Greene	James M. Davis	Combs P. O.		Jefferson.
Gibson	Hiram Hogshed	Washington	James C. Lavelle	Washington.
	John F. Childs	Greensburg	Edward Kessing	Greensburg.
	Philip F. Nye	Goshen	ver.	Huntington.
	John Wolford	Linton		Goshen.
	Robert Mitchell	Princeton	S. Vet. Strain	Linton.
				Princeton.
		Corydon	J. W. H. Littell	Corydon.
		Greenfield	Will R. Glascock	Greenfield.
		New Castle	Frank M. Millikan	New Castle.
		Kokomo	John T. Stringer	Kokomo.
		Huntington	Leon T. Bagley	Huntington.
Jackson County A.	B. H. Burrell	Brownstown	Ham Shirley	Brownstown.
Jay County A., H.	Elijah Lyons	Boundary	W. H. Harkins	Portland.
Jefferson County	D. P. Monroe	Saluda	Thos. H. Wallington	Stony Point.
Jennings County	Joseph B. Smith	Queensville	Wm. G. Norris	North Vernon.
Jasper County Ag.	David H. Yeoman	Surrey	Chas. W. Coen	Rensselaer.
		Vincennes	Gerard Reiter	Vincennes.
	M. O'Donnell	Crown Point	Walter L. Altman	Crown Point.
	John Brown	Laporte	Geo. C. Dorland	Laporte.
	Geo. W. Rogers	Anderson	Edmund Johnson	Anderson.
	John P. Barna	Indianapolis	Mrs. A. G. Chandlee	Indianapolis.
	Fielding Beeler			
	Anthony E. Johnson	Elliottville	N. B. Rogers	Bloomington.
	J. N. Davidson	Whitesville	F. L. Snyder	Crawfordsville.
	Jos. W. Chisum	Morocco	Shel. Smith	Morocco.
	Orlando Kimmel	Kimmel	J. H. Hoffman	Ligonier.
	J. A. Allen	Rockville	W. H. Elson	Rockville.

Pike County	S. H. Stuckey	Petersburg	on	Petersburg.
Porter County	William Riggs	Valparaiso		Valparaiso.
Posey County	John Wals	New Harmony		New Harmony.
Pulaski County	Henry Kittenger	Winamac		Winamac.
Rush County	John N. Rebout	Rushville	Frank J. Hall	Rushville.
	John Blessing	Shelbyville	Walter Elliott	Shelbyville.
	J. S. Wright	Rockport	S. D. Groves	Chrisney.
	B. F. Bridges	Rockport	Henry Hoch	Rockport.
	Jesse M. Gale	Angola	F. Macartney	Angola.
	C. P. Riggs	Sullivan	U. Coulson	Sullivan.
	A. Henderson	Lafayette	Mortimer Levering	Lafayette.
	Geo. W. Myerly	New Lancaster	B. B. Martindale	Tipton.
	S. H. Dallas	Newport	Lewis Shepard	Newport.
	L. S. Briggs	Terre Haute	C. C. Oakley	Terre Haute.
	Wm. Haxen	Wabash	B. W. Powell	Wabash.
	Jas. Goodwine	West Lebanon	Geo. T. Bell	West Lebanon.
	S. W. Taylor	Boonville	Wm L. Baker	Boonville.

DISTRICT AGRICULTURAL ASSOCIATIONS.

NAME OF SOCIETY.	PRESIDENT.	ADDRESS.	SECRETARY.	ADDRESS.
Association	H. R. Mathews	Acton	T. M. Richardson	Acton.
Company.	J. Knouse	Arcadia	J. T. Drover	Arcadia.
Association.	J. N. Miller	Bridgeton	Dempsey Seybold	Perth.
icultural Association	G. W. Armick	Camden	L. Hunt	Camden.
nd Vermilion Agr'l Ass'n	N. B. Newman	Kendallville	J. S. Conlogue.	Kendallville.
	David Ferguson	Covington	R. W. Miles	Covington.
	J. H. Parker	Fairmount	E. H. Ferree	Fairmount.
Co. Agr'l Society	W. H. Keasling	Mechanicsburg	I. W. Cooper	Middletown.
ural Association	Sam'l B. Hill	Charlottesville	T. B. Deem	Knightsatowa.
	Jno. W. Apple	Oaklandon	W. B. Flick	Lawrence.
	H. Woodling	Smiles	C. S. Wood	Leesgootee.
ir Society	J. A. McClung	Wagoners	J. Coffing	Wagoners.
	John Lockridge	Mae	J. D. Hostetter	New Rose.
ation	J. C. Boyer	Waterloo	M. Kiplinger	Waterloo.
	L. J. Nottger	North Manchester	E. F. Clemens	North Manchester.
ass'n	Sam'l Bowman	South Bend	C. G. Towle	Minhawaka.
	J. H. Fleece	North Salem	S. R. Davis	North Salem.
	Sam'l E. Teagarden	Bromer	Henry Reed	Orleans.
	A. W. Carter	Cartersburg	James M. Barlow	Plainfield.
	O. H. Hunt	Rising Sun	Wm. H. Madison	Vevay.
	Lloyd S. Jones	Warren	Isaac F. Beard	Warren.
	B. B. Benson	Dalton	J. E. Dennis	Dalton.
	R. W. Smith	Xenia	J. W. Eward	Xenia.

EXHIBIT OF AGRICULTURAL SOCIETIES OF INDIANA.

EXHIBIT OF AGRICULTURAL SOCIETIES

299

[illegible]

EXHIBIT OF AGRICULTURAL SOCIETIES OF INDIANA—Continued.

NAME OF SOCIETY.	Returns.																
	Horses.	Jacks and Mules.	Cattle.	Sheep.	Hogs.	Poultry.	Total Live Stock.	Mechanical.	Field and Garden Products.	Horticulture.	Bees and Honey.	Domestic Kill (Culinary).	Textile Fabrics.	Fine Arts.	Miscellaneous.	Special.	Total.
Spencer County Fair Ass'n.	99	10	18	37	20	29	213	5	229	118		40	111	9	18		771
Staten County Agricultural Soc	712	22	238	158	249	511	1,888	408	227	109	48	298	394	147	142		8,648
Sullivan County Ag'l Society	152	8	12	29	34	60	286	50	81	35	17	43	84		22	13	590
Tipperance Co. Ag'l Ass'n.	180		60	20	40	50	350	74	115	100	20	166	600	106	62	25	1,574
Tipton County Fair Company	300	12	34	43	54	69	572	74	220	46		200	300	250	28	56	1,906
	193	25	47	31	52	62	407	33	182		85	272	198	101	6		1,284
	190	1	37	17	10	24	219	23	84	47	5	51	204	49			688
	190	22	40	15	24	34	335	25	140	85	15	380	216	51	7		1,254
	301	6	49	32	83	67	538	49	119		1	108	455	109	636		968
	238	20	45	2	7	17	329	16	92			303	177	31	20		
Spencer County Fair Ass'n.	192	28	60	1	20	30	336		94	96		245	65	110	86		1,348
Staten County Agricultural Soc	115		46	66	36	75	338	85	296	291	6	402	514	130		72	2,136
Sullivan County Ag'l Society	140	17	51	30	32	34	324	7	123	43		312	120	95		4	988
Tipperance Co. Ag'l Ass'n.	355	5	93	155	280	89	957	95	131	23	10	235	535	165	119	8	2,220
Tipton County Fair Company	331	36	84	151	152	93	849	32	206	75		196	311	96	40		1,809
Vermillion Co. Joint Stock Soc	279	3	26	26	27	72	435	23	85	42		149	176	123		32	1,067
Vigo County Agricultural Soc	342	13	79	72	53	188	707	130	111	76		544	405	129	370	529	3,002
	223	11	65	65	71	200	636	74	126	77		210	220	144		7	1,493
	207	21	87	45	76	54	480	42	63	32	5	323	605	113	134		1,697
	190	63	76	71	71	137	608	57	325			336	452	78			2,349

EXHIBIT OF AGRICULTURAL SOCIETIES OF INDIANA.

ENTRIES.

NAME OF SOCIETY.	Horses.	Jacks and Mules.	Cattle.	Sheep.	Hogs.	Poultry.	Total Live Stock.	Mechanical.	Field and Garden Products.	Horticultural.	Bees and Honey.	Domestic Skill.	Textile Fabric.	Fine Arts.	Miscellaneous.	Special.	Total.
Acton District Fair Association	130	1	9	32	32	12	216	70	309	210	.	364	96	88	.	35	1,388
Arcadia District Fair Company	67	6	6	40	40	7	146	5	63	28	.	17	79	161	309	.	1,338
Bridgeton Union	215	13	48	38	38	74	418	48	191	45	.	43	198	14	70	25	1,400
Carroll County Harvest Home Ass'n	115	5	46	10	68	46	230	150	229	44	.	478	1,090	263	340	.	1,498
Eastern Indiana Agricultural Ass'n	241	.	130	137	115	334	957	55	670	.	.	812	.	.	.	.	4,187
Assn Soc.	311	13	27	41	56	54	502	44	147	108	.	620	327	112	87	.	1,947
Soc.	188	18	30	47	51	342	726	44	239	203	4	82	418	40	89	.	1,781
Soc.	193	4	27	57	76	71	428	22	50	32	.	89	518	118	2	.	1,252
n.	600	100	154	123	109	230	1,316	50	100	98	5	89	306	40	153	10	2,170
.	118	7	46	39	61	42	313	225	511	420	.	324	124	15	189	60	2,181
let Fair Ass'n	126	11	56	27	29	38	287	28	105	77	.	28	304	79	399	.	1,302
Co. Dist. Society	87	.	55	57	33	31	286	.	228	101	.	189	236	.	7	37	1,064
Agr'l Ass'n.	401	8	62	58	114	52	695	17	31	22	.	155	218	38	19	14	1,282
Indiana Agr'l Ass'n.	126	2	72	95	96	214	535	64	143	691	.	196	925	134	72	10	2,672
n.	240	19	102	65	89	152	667	200	125	26	3	50	387	54	16	3	1,530
.	327	4	72	55	78	89	625	10	98	50	.	263	117	33	74	.	1,290
.	219	20	45	40	17	7	330	9	77	21	.	94	58	.	37	.	644
.	102	7	.	1	.	5	115	14	66	21	4	8	7	2	4	.	359
.	161	17	35	41	27	38	319	74	52	124	.	107	186	50	46	.	1,277
.	334	16	68	56	102	94	670	87	198	140	16	430	220	46	80	75	2,635
.	207	5	35	78	16	136	479	37	169	113	7	214	143	28	105	7	1,254
.	147	24	53	55	47	168	492	36	72	28	2	32	141	.	10	.	847

EXHIBIT OF AGRICULTURAL SOCIETIES OF INDIANA, 1888.

NAME OF SOCIETY.	Premiums Paid.																
	Horses.	Jacks and Mules.	Cattle.	Sheep.	Hogs.	Poultry, Dogs, etc.	Total Live Stock.	Mechanical.	Field and Garden Products.	Horticulture.	Bees and Honey.	Domestic Skill.	Textile Fabrics.	Fine Arts.	Miscellaneous.	Special.	Total.
Indiana State Board of Agriculture	\$3,500	\$35	\$2,026	\$583	\$321	\$428	\$7,393	94	\$421	\$763	\$7	\$1196	\$210	\$43	\$143	.	\$9,917
Boone Co. Agricultural Society	1,600	25	316	140	230	102	1,413	65	46	10	.	109	9210	943	49	.	2,803
Cass Co. Agricultural Society	1,160	7	892	84	128	40	1,812	35	82	74	.	100	174	65	47	.	3,443
Clinton Co. Agricultural Society	1,401	90	618	131	192	128	2,500	30	56	15	.	106	197	47	61	.	3,017
Daviess Co. Agr'l M. and M. Ass'n.	579	172	326	112	138	116	1,443	31	79	14	6	83	237	.	.	.	1,894
Decatur Co. Agricultural Society	945	38	317	81	225	76	1,583	13	30	9	.	34	79	23	62	.	1,832
Dubois Co. Agricultural Society	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	944
Elkhart Co. Agricultural Society	171	.	944	37	62	93	548	62	21	17	.	14	176	74	27	.	2,214
Gibson Co. Agricultural Society	512	111	375	90	183	72	1,833	185	145	150	10	181	167	94	25	650	2,370
Greene Co. Agricultural Society	450	30	83	66	62	62	754	32	73	27	.	53	66	30	.	212	1,146
Hancock Co. Agricultural Society	670	26	439	112	234	84	1,574	100	93	.	13	.	152	123	126	.	2,154
Harrison Co. Agricultural Society	100	10	30	15	94	38	737	26	9	36	.	134	97	19	.	.	1,683
Henry Co. Agricultural Society	691	6	286	106	133	78	1,299	40	32	16	.	28	176	54	56	46	1,753
Howard Co. Agricultural Society	908	17	572	140	199	152	788	75	75	51	.	27	174	36	.	.	2,227
Huntington Co. Agricultural Society	928	36	420	298	307	110	2,096	100	223	60	.	319	399	228	.	128	3,194
Jackson Co. Agricultural Society	409	17	54	45	23	41	590	17	14	5	.	25	79	26	7	33	900
Jasper Co. Agricultural Society	579	5	212	15	37	12	880	130	17	20	.	44	68	2	3	.	1,014
Jay Co. Agricultural Society	500	8	500	125	332	91	1,556	130	150	25	.	164	150	30	.	15	2,130
Jefferson Co. Agricultural Society	21	.	12	5	4	.	42	27	16	23	.	17	12	.	.	139	1,653
Jennings Co. Agricultural Society	.	.	.	.	.	.	1,592	38	49	.	.	7	.	.	131	43	1,855
Knox Co. Agricultural Society	2,048	135	899	107	253	319	3,751	130	125	135	.	105	165	150	63	.	4,624
Lake Co. Agricultural Society	1,939	.	85	36	66	8	1,264	8	9	2	.	16	73	33	21	30	1,435
Laporte Co. Agricultural Ass'n.	803	.	200	84	55	18	1,143	78	37	39	4	73	50	26	26	.	1,506
Madison Co. Agr'l Ass'n.	1,225	.	317	163	902	161	2,030	79	194	.	.	194	.	265	226	.	3,010
Monroe Co. Agricultural Society	256	38	57	50	40	27	443	9	74	26	.	28	66	13	6	38	911

DISTRICT AGRICULTURAL SOCIETIES.

NAME OF SOCIETY.	PREMIUMS PAID.																
	Horses.	Jacks and Mules.	Cattle.	Sheep.	Hogs.	Poultry.	Total Live Stock.	Mechanical.	Field and Garden Products.	Horticulture.	Bees and Honey.	Domestic Skill.	Textile Fabrics.	Fine Arts.	Miscellaneous.	Special.	Total.
on	\$31	85	22	\$17	\$13	33	\$114	5	\$11	33		\$18	39	94		\$12	\$166
ly	80	29	178	10	20	5	132	38	20	13		6	8	\$18	77	8	184
'n	474	34	87	33	55	39	967	38	94	15		87	58	4	12	15	1,102
Ass'n	247		458	150	202	94	1,280	15	55			74	194	70	55		2,985
A. A.	1,592																1,968
St'k Ag'l S'y	307	28	382	97	113	112	1,130	52	51	20	7	23	94	13	36		1,838
ware Co. A. S.		60	230	205	206	175	1,779	45	40	20	5	45	105	45			1,390
	900	10	84	32	110	20	470	10	34	50		28	18	16	16		2,114
air Ass'n	204	55	202	22	41	11	734	10	15	47		11	105	31	86		832
ounty District	401		83	24	27	10	270		29	10		25	40		3		1,037
	126																379
	1,032	17	224	83	145	28	1,571	11	34	11		48	73	18	17		1,784
	276	4	269	105	73	54	806	35	20	63		22	147	57	10	20	1,183
	1,884	34	510	122	128	91	1,852	28	57	11	5	11	198	30	12	22	3,155
																	\$,462
	883	19	367	95	115	86	1,546		64	21		56	41	21			1,751
	608	33	79	41	27	5	456		25	9		21	19		19		838
	180	22							4	1		1	1	1	10		214
	918	34	168	85	95	30	1,332	146	82	42		67	121	40	30		1,863
	1,118	28	270	90	175	75	1,756	75	40	54	20	114	170	25	27	40	2,322
	204	11	84	77	32	49	518	8	21	18	7	23	23	6	5	12	2,647
																	1,136

ADAMSON & BROWN, PRINTERS.

EXHIBIT OF AGRICULTURAL SOCIETIES.

NAME OF SOCIETY.	RECEIPTS.				DISBURSEMENTS.						
	Admission Fees.	License Fund.	Entry Fees.	Privileges Sold.			Expense of Fair.	Rents, Taxes and Incidentals.	Dividends, if Any.	Balance.	Total.
...	\$16,501	...	\$952	\$4,638	\$18,475	\$40,546	\$9,917	\$12,329	...	...	\$41,081
...	3,375	...	640	635	300	4,850	2,826	400	...	...	5,225
...	2,921	...	63	496	301	4,331	2,443	1,542	...	\$12	4,331
...	3,632	...	327	631	241	4,847	3,017	1,049	22	...	5,200
...	1,779	...	471	936	204	3,527	1,894	578	1,300	...	3,528
...	1,700	15	604	259	507	3,064	1,832	926	66	...	3,778
...	1,329	...	...	284	570	2,184	944	218	239	...	2,184
...	2,279	...	615	478	545	3,917	2,214	551	383	456	3,917
...	4,190	20	80	688	569	5,542	2,370	1,618	39	412	5,542
...	920	40	245	250	14	1,469	1,148	286	25	...	1,704
...	2,744	...	709	725	31	4,210	2,899	1,406	...	...	4,305
...	1,741	...	...	383	131	3,238	1,683	1,090	32	145	3,238
...	1,988	25	75	620	2,078	4,788	1,753	839	1,239	12	4,788
...	2,542	67	767	817	349	3,554	2,227	1,026	250	200	3,554
...	3,412	...	400	729	834	5,383	3,184	967	...	902	5,383
...	505	...	233	92	48	880	600	220	80	...	900
...	686	...	30	231	267	1,235	1,014	130	...	41	1,235
...	3,370	20	449	312	116	4,396	2,180	738	306	...	4,711
...	218	25	19	35	120	417	139	50	7	...	607
...	1,633	...	406	417	138	2,594	1,855	437	...	...	2,630
...	3,812	60	1,106	1,068	530	6,598	4,624	2,333	...	...	7,252
...	1,016	...	378	208	57	1,659	1,435	263	50	...	1,794
...	1,407	25	307	205	490	2,424	1,505	601	...	161	2,434
...	3,076	...	115	686	22	3,906	3,010	771	56	67	3,906
...	...	132	...	...	32	154	44	...	49	61	154

EXHIBIT OF AGRICULTURAL SOCIETIES—Continued.

NAME OF SOCIETY.	RECEIPTS.					DISBURSEMENTS.							
	Admission Fees.	License Fund.	Entry Fees.	Privileges Sold.	All Other Sources.	Total.	Improvements.	Premiums Paid.	Expense of Fair.	Rents, Taxes and Incidentals.	Dividends, if any.	Balance.	Total.
Monroe County Agricultural Society	\$775		\$66	\$115	\$169	\$1,126	\$25	\$916	\$85	\$120			\$1,126
Montgomery County Agricultural Society	5,908	\$101	912	920	730	8,632	2,400	7,195	650	65			10,310
Newton County Agricultural Association	1,350		126	321	248	2,033	131	861	231	753		124	2,003
Noble County Agricultural Society	2,015		475	403	6,497	9,392	3,917	1,909	975	1,319		1,881	9,392
Parke County Agricultural Society	1,296	20	445	312	590	2,664	757	2,338	843				4,064
Pike County Agricultural Society	1,727	15	490	420	142	2,795	280	1,655	816	400			3,152
Porter County Agricultural Society	1,689		371	207	259	2,526	341	1,690	299	225			2,576
Posey County Agricultural Society	1,686	50	142	1,425	836	4,090	300	1,428	810	40		1,511	4,090
Rush County Agricultural Society	3,768		984	721	805	6,300	745	4,073	836	644			6,300
Shelby County Agricultural Association	324		471	704	3,400	4,900	662	3,065	1,048			125	4,900
Spencer County Agr'l and Ind'l Society	1,335	20	296	243	213	2,110	44	1,350	269	313		112	2,110
Spencer County Fair Association, at Rockport	1,522		187	250	557	2,317	343	1,069	368	243		296	2,317
Stauben County Agricultural Association	2,083			447	622	3,153	578	1,521	391	208	\$58	406	3,163
Sullivan County	1,141	25	277	202	3,537	5,273	6,355	1,362	714	370			8,801
Tippecanoe County Agricultural Association	5,500		250	150	200	6,100	500	3,850	1,500			250	6,100
Tipton County	2,171	421	53	150	175	2,968	600	1,998	469			56	2,968
Vermillion County	1,439		453	922	318	2,583	465	1,454	278	366			2,584
Vigo County Agricultural Society	4,965	142	1,796	648	6,979	14,530	6,199	4,611	2,286	1,008		451	14,530
Wabash County Agricultural Society	3,434		835	430	200	4,876	2,000	3,606	325	50			5,983
Warren County Agricultural J't St'k Society	1,693		227	378	737	2,636	470	1,685	491				2,674
Warrick County Agricultural Association	1,290		796	162	2,435	4,674	3,718	3,111	699	2,299			9,726

DISTRICT AGRICULTURAL SOCIETIES.

EXHIBIT OF AGRICULTURAL SOCIETIES.

307

NAME OF SOCIETY.	RECEIPTS.				DISBURSEMENTS.								
	Admission Fees.	License Paid Received.	Entry Fees.	Privileges Sold.	All Other Sources.	Total.	Improvements.	Premiums Paid.	Expenses of Fair.	Rents, Taxes and Incidentals.	Dividends, if any.	Balance.	Total.
Acton District Fair Association	\$391		\$50	\$32	\$285	\$769		\$166	\$281	\$107		\$214	\$769
	340		20	93		453		184	118	150			453
	1,042	\$50	76	213	124	1,506		1,102	391			22	1,506
East Home Association	652			75	397	1,124	\$353	761	573				1,688
Agricultural Association	4,772			1,709	342	6,823	600	2,985	1,023		\$1,956	257	8,823
and Vermillion Ag'l Ass'n.	2,244	15	557	246	475	3,539	639	1,968	316	434		181	3,539
	2,483			307	401	3,201	144	1,838	762	47		407	3,201
ural Sec.	1,434		59	575	76	2,148	100	1,390	463	200		5	2,148
						2,560							3,560
	681		20	100	200	1,001	75	832	94				1,001
	887	15	180	250		1,332	200	1,087	632	25			1,884
	501			42	243	786	161	379	232	86			1,859
	1,643		317	420	492	2,872	105	1,784	1,013				2,902
	2,091	36	150	679	329	3,286	123	1,163	1,406	84		467	3,286
	3,401		1,109	517	724	5,752	472	3,155	1,140	251		732	5,752
	6,811	48	1,690	1,140	2,070	11,701	1,480	5,482	3,648	120			11,536
	1,500		449	125	794	2,868	346	1,751	318	438		14	2,868
	670		133	159	344	1,306		888	358			70	1,306
	1,739	30	318	346	223	2,657	118	1,983	492	387			2,861
	3,025		467	454	149	4,086	363	2,522	796	272		110	4,086
	758		53	128	40	981	40	647	295				982
	1,244		283	271	96	1,897	156	1,139	599	16			1,912

TROTTING AND PACING HORSE BREEDERS.

The Indiana Trotting and Pacing Horse Breeders' Association met in Room 35, State House, January 23, 1889, and was called to order promptly at 1 P. M. by Vice-President M. L. Hare, who presided during the meeting, in the absence of President W. P. Ijams. A letter from C. L. Clancy, of Edinburg, introducing Omer Bland as his proxy, and favoring a speed meeting during the summer, also making several pertinent suggestions regarding such meeting was read by the vice-president and indorsed by the association.

Secretary J. S. Darnell called the roll, showing members present as follows:

M. L. Hare, Fishers' Switch.	H. E. Davenport, Sheridan.
B. T. Buford, Danville.	H. L. Cavode, Noblesville.
R. J. Wilson, Rushville.	E. A. Allman & Son, Waverly.
J. S. Darnell, Lebanon.	Omer Bland, Edinburg.
N. A. Randall, Indianapolis.	Cope & Hunter, Brownsburg.
M. F. McHaffie, Stilesville.	Dr. C. E. Wright, Indianapolis.
L. W. Cobb, Aurora.	F. M. Rottler, Indianapolis.
J. L. Bradley, Edinburg.	John Browning, Indianapolis.
C. F. Bowen, Danville.	Clint Hare, Indianapolis.
Caleb Jackson, Centreville.	

In addition to the above, a number of members came in after roll call, swelling the aggregate to seventy-eight in attendance, the largest convention yet held by the association.

The minutes of the previous meeting were read and approved.

Secretary J. S. Darnell submitted his annual report containing an itemized exhibit of the receipts and disbursements of the association for the past year. The report showed a deficit of over \$600, from last year's trotting meeting, and brought out the following remarks:

Mr. McHaffie. If the unpaid dues were collected, our shortage would be insignificant, and this should be attended to immediately.

Secretary Darnell. All the members have been notified by mail of their arrears to the association, and in most cases I have drawn on them through the bank for the money, but the drafts have been returned unpaid. I have exhausted my resources in my attempts to collect these unpaid dues. Now, what are we to do?

R. J. Wilson. Strike their names from the roll of membership and do not allow them to enter a horse at our future meetings until they are "square" with the association. It is unfair for us, who have paid, to trot our horses against men who are delinquent, and have not the welfare of the association enough at heart to settle and help relieve us of our indebtedness.

Caleb Jackson. The \$10 fee is too large for our young breeders, who are just embarking in this business, to pay, and I am partially in favor of reducing it to \$5. At least would like to have an expression on the subject from this meeting.

H. L. Cavode. We need more members, and in soliciting men to join us, the sticking point seems to be the \$10 fee. It is a question with me whether, as an experiment, we should not reduce the fee to \$5.

C. F. Bowen. I think instead of reducing the fee we should rather increase it, and pay our debts like men. Trot for more money. Larger purses would bring more horses, larger crowds, and in this way swell our receipts so we could pay out instead of being in debt as we now are. I am not in favor of any reduction.

Vice President Hare. I agree with Mr. Bowen. The time has come when we must run this association on a sound financial basis or go under. I would rather have 25 good members who will pay, than 100 who only pay when they feel like it. Make this payment of the dues obligatory on the members or drop them from the rolls. Weed out the delinquents as other associations of this character do in such an emergency. We can not afford to let this association fail, and we won't allow it, either. We will go down in our pockets, right here to-day, and pay off our indebtedness. We must push this association to the front, even if we only offer a stake of \$25, to show the people how our colts can trot or pace. It will bring buyers to Indiana and make a market for our colts such as breeders in our sister State of Kentucky has. We raise as good colts as any other State in the Union, and this association is the thing to advertise that fact to the world. Let us raise a purse right here to pay off this indebtedness that now hangs over us like a pall. I will give \$25. Now, you gentlemen step up and do likewise, and we can raise enough money right here to square this debt in a twinkling.

Caleb Jackson. Mr. Hare speaks my mind to a "T," and I will put my hand in my pocket as deep as anybody to pay this debt off. I will give \$100 if necessary. I want to see this thing "go."

The Treasurer, A. C. Daily, submitted his annual report, showing receipts and disbursements for the past year.

Chairman Cobb, from the committee appointed to examine the accounts of the Secretary, reported :

Gentlemen :

We, your committee appointed to audit the books, financial reports and accounts of our Secretary, Mr. James S. Darnell, beg leave to say that we have gone over them thoroughly, and find the books and accounts kept in an excellent, business like manner, there being upon the books a credit and debit account properly kept

with each member. We further find that there are thirty-three members delinquent in their annual dues. We recommend that a legitimate effort be made to at once collect these delinquent fees.

The report was concurred in and adopted.

J. L. Bradley. It appears from the report just submitted that we have sixty members, and only twenty-seven of this number are in good standing, the other thirty-three being delinquent in their annual dues to this association. At \$5 it would take one hundred and twenty members to make an amount equal to what sixty would pay in at our present fee, \$10, provided all paid up. Under the circumstances I doubt the advisability of reducing the annual dues.

Caleb Jackson. Can we make these delinquents pay their annual dues by law process?

Vice President Hare. As to that I am not advised. I believe we have no charter.

L. W. Cobb. My ideas in relation to this matter have been expressed by the gentlemen who have preceded me. By helping along this association we will help ourselves. My heart and soul is in it, and I don't want it to fall by the wayside.

In answer to a question put by R. J. Wilson, Secretary Darnell explained satisfactorily his connection with an entry made in a race at the last meeting, which was objected to by Rushville horsemen on technical grounds.

Vice President Hare. Mr. Darnell did exactly right in that matter, and is supported in his stand by all the members of this association.

Mr. Randall submitted the following, which was adopted:

Resolved, That no member of the Indiana Trotting and Pacing Horse Breeders' Association shall be allowed to start an animal in any race under the auspices of this association until all his dues to the association are paid, nor shall he enjoy any of the privileges of this association.

At the suggestion of Mr. Bradley, Mr. Clint Hare was selected to solicit memberships in the association from Indianapolis horsemen.

Dr. C. E. Wright offered the following resolutions, which were unanimously adopted:

Resolved, That the secretary be instructed to notify all members delinquent in dues; that their names will be dropped from the roll of membership unless payment is made within 30 days of all indebtedness.

Resolved, That it is the sense of this association that the State Board of Agriculture should instruct its committees to judge all light harness horses contesting for premiums at the State Fair under what is known as Wallace's Scale of Points.

Mr. N. A. Randall offered the following resolution, which was lost:

Resolved, That in any race under the auspices of the Indiana Trotting and Pacing Horse Breeders' Association, at the request of any owner of a horse competing in such race, a timer or timers shall be appointed by the judges in the stand to take the time of said owner's horse in whatever position he may occupy behind the winning horse, and report the same to the judges, and the time so taken and reported shall constitute and be recognized as a public record, as a credit and a bar, by this association.

Also, the following, which was adopted :

Resolved, That the secretary of the Indiana Trotting and Pacing Horse Breeders' Association shall be entitled to and receive for his services \$200 per year, and that he shall devote his entire time for at least two months prior to any race meeting of the Association in advertising and making other preparation for the meeting.

The Chair appointed Messrs. John Browning and Dr. C. E. Wright, in connection with the presiding officer (M. L. Hare), to wait on members of the Legislature and press bills to their final passage, recommended as necessary to the protection of the horse interests of the State.

The election of officers resulted as follows :

EXECUTIVE COMMITTEE.

J. H. McCullum, Monticello, Ind., to fill the unexpired term of John T. Stevens, serving until 1890.

Dr. Chas. E. Wright, Indianapolis, term expires 1892.

H. L. Cavode, Noblesville, term expires 1892.

B. T. Buford, Danville, term expires 1892.

Geo. H. Gifford, Tipton, term expires 1892.

M. S. Claypool, Muncie, term expires 1892.

New members were proposed and admitted as follows :

Messrs. A. Chickentanz, of Plainfield; J. M. Hightshue, Indianapolis; J. H. McCullum, Paoli; E. J. Reed, New Castle; A. Lieber, Indianapolis; W. E. Woods, Greensboro; Capt. P. M. Negley, Castleton; E. J. Robinson, Indianapolis; O. Posey & Son, Rushville; J. S. Mansur, Indianapolis; Elmer Vandervoord, Sheridan; H. F. Wood, Indianapolis.

On motion the Association adjourned subject to call of the Executive Committee.

EXECUTIVE COMMITTEE.

Immediately on the adjournment of the convention the Executive Committee convened and elected the following officers for the ensuing year :

President—Charles E. Wright, of Indianapolis.

Secretary—J. S. Darnell, of Lebanon.

Treasurer—A. C. Daly, of Lebanon.

Board of Censors—N. A. Randall, of Indianapolis; G. W. Morrison, of Connersville; C. S. Bowen, of Danville; J. L. Bradley, of Indianapolis, and S. J. Peabody, of Columbia City.

Adjourned subject to call of President.

STATE VETERINARIANS.

The veterinarians of the State met in the city of Indianapolis in January, 1888, and organized into a permanent society by the adoption of a Constitution that admitted to membership only recognized graduates of veterinary colleges in first class standing. The Constitution adopted contains articles similar to those embodied in the Constitutions of like State associations that have already been formed in Minnesota and Pennsylvania. After a short address by the temporary chairman the society organized by the selection of the following permanent officers to serve during the ensuing year:

President—Dr. H. K. McCaulay, Indianapolis.

First Vice President—Dr. T. L. Armstrong, Indianapolis.

Second Vice President—Dr. W. B. Wallace, Marion.

Corresponding Secretary—Dr. M. E. Knowles, Terre Haute.

Recording Secretary—Dr. J. C. Rodgers, Anderson.

Treasurer—Dr. B. G. Orlopp, Indianapolis.

During the progress of the meeting many discussions were engaged in, and a number of pertinent addresses submitted, which will be valuable to the fraternity hereafter in the practice of their profession.

The first paper, by Dr. J. C. Rodgers, of Anderson, was upon "The Importance of Meat Inspection to Public Health." He referred in strong terms to the necessity of a legislative enactment on this subject, and claimed that it was imperative for the protection of the citizens of the State, against butchers who slaughtered and sold to the public diseased meats, knowingly. Again he said that in many cases disease was caused by the eating of flesh which butchers themselves could not tell was diseased. Many diseases are due to germs in the meat that can be detected only through the microscope. He dwelt on tuberculosis as one of the diseases that affects high-bred cattle, especially. He showed its progress from incipency to its worst stage. Pork, also, came in for a scoring, and he called attention to the other dangers that attend the eating of meat bought hap-hazard in our markets.

Dr. Armstrong introduced a subject which brought out an animated discussion. He referred to recent actions of the State Board of Health in a deprecatory way, mentioning well known cases where diseased animals had been sold for slaughter within the State, and specified the stockyards of Indianapolis as one of

the places where such animals had been disposed off. He also favored milk inspection, and called for the appointment of a State Milk Inspector in the proposed new law.

On the same subject Dr. M. E. Knowles, of Terre Haute, said:

"It is becoming more important every day that there should be a regular meat inspector of undoubted responsibility in this city. He believed that there should be both an efficient State inspector and a close municipal oversight in each city as well, especially in large ones, where the opportunity of readily feeding diseased meat to the people, in the absence of such inspection, is truly appalling. No better evidence of this crying public need can possibly be given than the fact that the statistical records of Germany show a great decrease in mortality since the introduction of a thorough system of official meat inspection. It is a fact recently established by experiments, certainly not known to the public, and perhaps to few veterinarians, that if a man enter a restaurant in a fatigued condition from business exertions or cares, and calls for a glass of milk in its raw or uncooked state, containing germs of tuberculosis, they will almost inevitably plant in him some disease. Such inoculation is happening every day in the public eating houses, and is laying the foundation of thousands of cases of consumption throughout this country. Raw food is always dangerous, of whatever kind, if obtained from the animal kingdom, unless its history can be vouched for, which is seldom the case. From raw milk he has traced, beyond the shadow of a doubt, the most violent outbreaks of scarlet fever and measles in cities, the germs being present in the milk, and found nowhere else in food or surroundings to cause the diseases. Within the past two days he had seen, in walking through the streets of Indianapolis, measley hogs hung up for sale at butchers' doors and in their shops. Only an expert can usually detect the marks of measles under the thin outer skin of a hog, yet they are quite plain, consisting of minute round red dots or points more or less apt to appear in small patches the size of a pea. By a little practice they can be readily detected with the unaided eye, but they are seen better under a magnifying glass. There is a disease, among cattle principally, the actinomycosis, commonly called cancer-jaw, though the cancer may spread to other adjacent parts. This disease, it has been established, is capable of producing genuine cancer in the human system from the use of meat from animals suffering from this disease, and such meat can never be told from healthy meat except from actually knowing the animal's disease. What is needed, he said, in a great city like this is a public Abattoir, such as they have in Paris right in the heart of the city, where animals will be killed for merely the cost of killing."

Dr. Henry McCauley read a paper entitled, "The use of Sulphate of Morphine." The production was of a technical character of interest only to veterinarians.

Dr. Knowles announced that he had prepared a bill calling for the appointment of a State meat inspector by the Legislature.

After a profitable meeting the association adjourned to meet in the city of Indianapolis during fair week in September next.

SHORTHORN BREEDERS.

The State Shorthorn Breeders' Association met in the Lecture Room of the State Board of Agriculture, January 24, 1889, at 1 o'clock p. m. and was called to order by President Robert Mitchell, of Princeton.

Judge J. S. Buckles, of Muncie, was called to the chair and President Mitchell read his annual address as follows:

PRESIDENT'S ADDRESS.

Gentlemen of the State Association of Shorthorn Breeders:

As our annual sessions come and go, it affords us an opportunity to meet together, renew our friendships and pledge ourselves anew to maintain the prominence of the noble race of cattle this association represents. During the past year we have been blest with abundant crops, our herds have been free from any contagious diseases, and yet, with all these blessings, prices of Shorthorns have averaged low. Let us now look for the cause of these low prices, and a remedy. My observation, while attending several of the sales during the sale season, last year, was that a great many Shorthorns were offered at public sale in such poor condition that the animals were scarcely worth what they brought to the purchaser. The offering of such Shorthorns at public outcry was a great damage to the Shorthorn interests, and certainly could not be satisfactory to the owners of the cattle, as the quality of the herds from whence they came would be estimated by those sold. Hence it is evident, that to maintain good prices for cattle of any breed, it is absolutely necessary to have the sale cattle in what might be called good flesh. I don't mean by that that they ought to be beef fat, but flesh enough to show to good advantage. If too fat, and they fall into the hands of men that are not good feeders, dissatisfaction will be the result.

The offerings of many of the Shorthorns at sales last year, by breeders, took on another form which has had a telling effect upon the Shorthorn interests, namely, that they were trying to unload their plain bred cattle upon the new beginner. Better a thousand times that those cattle had been fitted for the butcher's block than sold as they were for breeders. The prices they would have brought as butcher's beasts would have been much better and more satisfactory to the owners. Now the remedy for this sort of procedure by breeders is somewhat difficult I admit, yet I believe that all Shorthorns ought to pass the eye of a

critical inspection before being offered at public sale. The pedigree of a Shorthorn is not admitted to record until it has passed inspection. This is done for the protection of the Shorthorn interest. Then if inspection of a pedigree is necessary to protect the Shorthorn interest, why not inspect the Shorthorns. The breeders can do this themselves if they will; but self-interest is paramount to the general interest. Then I ask why should an individual have the privilege to put on sale Shorthorns that will be detrimental to the general interest of Shorthorns? The Shorthorns, during the fair season, maintained the prominence they have heretofore held in public estimation. At many of the leading fairs the competition amongst the rival breeds was close and sharp. The beef breeds at our recent State Fair were represented by herds from the best breeders in all this land, and eight grand herds of beef breeds were exhibited; the Shorthorns winning their full share of the honors. In a previous address I called attention to the best way to bring the Shorthorns into favor with the general farmer; that was for Shorthorn breeders to fit up a few steers in beef condition and take them around to the fairs and exhibit them with their breeding herds. In this way a practical test of the product of the Shorthorn could be shown. Three steers were exhibited at our State Fair by Martin Cutsinger, of Johnson County, Ind., and lately sold in the Buffalo market at \$8 per cwt., average weight at time of sale 2,223 pounds, bringing per head, \$177.84. Such steers not only speak for the feeder and breeder, but also for the State. Suppose three such steers were exhibited at every county fair in the State, the benefit to the Shorthorn interest could not be estimated in dollars and cents.

A word here on what we might call show herds and the effect of showing such herds has upon the average Shorthorn breeder. Fair managers are beginning to discuss whether professional exhibitors are an advantage or disadvantage to fairs. It is true no herd can win honors in the show ring without being fat and fitted expressly for that purpose, and the honors so won reflects credit on that herd and its owner. But as fairs are fast drifting into what might be called circuits, giving opportunities for these professional exhibitors to go the rounds with their herds, does this system not have the effect of keeping many good herds away from the show ring and discouraging many of the breeders from trying to win honors as breeders of Shorthorns? Few breeders dare to attempt to go into the show business, for the reason that it requires them to sacrifice upon the altar of the show ring a number of the best animals of their respective herds. Now I ask the question, Do you, as breeders of Shorthorns, think the professional exhibitor an advantage or disadvantage to the Shorthorn interest in general?

Many Shorthorn breeders are studying plans by which the standard of Shorthorns can be elevated, but none that I can recommend is better than a free use of the knife, for if good steers at three years old will bring \$7 or \$8 per cwt. a much better profit can be made than by selling them as bulls at one year old at from \$50 to \$75 per head.

The expert system of judging Shorthorns in the breeding classes at our fairs by butchers is a system that needs your careful consideration. The butcher will be likely to judge the animal from a butcher's standpoint. He will make the award to the animal that will give him the best return for the money he has paid.

The animal that gives a large return for the feed consumed (the feeder's choice), the animal that matures early (the breeder's choice), may all be passed by in the awards by the butcher. Yet these are important points in breeding and feeding cattle for the block.

At a meeting of the Board of Directors of the American Shorthorn Breeders' Association at Chicago, Ill., November 21, 1888, Judge Nourse offered the following resolution, which was adopted:

Resolved, That the Executive Committee be authorized to arrange with the State Agricultural societies or fairs of such States as have considerable dairy interests to pay from the funds of the Association a sum not exceeding \$250 per annum to any one society, to be paid as premiums for a short-horn class for the production of milk and butter: *Provided*, That such short-horns be permitted by such societies to contest for sweepstakes premiums with other dairy breeds.

I am aware that public opinion in the Western States has classed the short-horns as indifferent milkers. As milkers, where the milking quality has been preserved in the short-horns, they are large milkers, and where they are bred and reared for that object no cows excel them. It has been only by neglect that the milking qualities of the short-horn cow has declined, and this has resulted from the undue stimulation of the feeding quality, as both milk and flesh in excess can not be made by a cow at the same time. A fine, handsome cow does not show well when in lean milking condition. Giving little or no milk she fleshes up, shows grandly and sells well. It is for selling and showing purposes chiefly that the milk has been neglected, but it can readily be restored by selecting cows and bulls which indicate the milking tendency, and breeding and rearing the young with that object in view.

At our last annual meeting the Indiana Farmer kindly offered the use of their columns as a means of communication with the breeders of this State on any and all subjects pertaining to short-horns. This department of the Farmer has been very interesting and useful, and if a proper effort is made by the breeders this department can be made a power for good, and is likely a better channel through which to reach the average farmer in the interest of short-horns than a paper wholly devoted to that interest.

The Short-Horn Gazette, published here, has during the past year been doing sturdy work for the cause it represents, and the time is near when a paper wholly devoted to the short-horn interest will be a necessity. In this connection I feel it a duty we owe to give expression to that able advocate of the live stock interests of the West, the Breeders' Gazette, of Chicago, Ill. This paper has always been a friend to this Association, and our meetings have always been well advertised and carefully and honestly reported in its columns.

Gentlemen, it is with deep regret that I have to announce the death of one of the pioneer breeders of short-horns, Dr. A. C. Stevenson, of Putnam County. Alexander C. Stevenson was born November, 1802, in Woodford County, Ky., died at his home, two miles east of Greencastle, Ind., January 2, 1889. In the death of Dr. Stevenson the State has lost a worthy citizen, the short-horn breeders one whose example is worthy of imitation. He died full of years, and the monument he raised by his earnest devotion to the cause of agriculture will stand.

Gentlemen, allow me to express my appreciation for the honor you have bestowed upon me by electing me to preside over your deliberations for the past three years. I desire now to thank the officers and members with whom I have been associated during my official terms, for their uniform courtesy, and express the wish that you will be able to elect new officers who will take up the work where we have left off and push it on to greater success.

Secretary Quick submitted his report as follows:

SECRETARY'S REPORT.

At the time of submitting my last annual report, January 25, 1888, the secretary's roll book of this association exhibited 211 members, though that report was printed to make it read 217, six more than were on the books at that time. There has been since that report twenty-five new members enrolled, making the total enrollment, at present, 236. According to our Constitution we collect a membership fee of \$1 from each person on enrolling his name as a member, and, subsequently, fifty cents dues each year. I will here state that quite a number are delinquent in payment of dues, and I must reiterate my belief of last year that those delinquent are usually of the number that fail to attend the Annual Convention. When a member is found at our meeting he is invariably found in good standing. It would then seem to be very important to get each year as many members in attendance as possible, not only for the financial standing of our association, but as well for the interest of the meeting and breeding fraternity.

In calling attention to the Indiana Shorthorn Directory, permit me to state that at the opening of our last meeting we had on hand 496 of the paper bound and seventy of the cloth bound, and that at that meeting this association decided to sell the former, each, at twenty-five cents and the latter at seventy-five cents. At the meeting and since, Directories have been sold to the amount of \$7.25; of the remainder, all are on hand but a few that have been given with the Association's compliments to public men or institutions.

And now, in view of the fact that these Directories were published about two years ago from information gathered and supplied the secretary of this association the year before that, and are necessarily now more or less unreliable, owing to the continued changes going on in all herds, and, also, noting the good accomplished by the Illinois and Ohio Associations by donating their Directories to the breeders not only of their own State that are mentioned in it, but to all breeders interested enough in Shorthorn cattle to desire one, your secretary would respectfully recommend that this association donate the State Directories on hand to the breeders of the State not having copies, and that through this and any other legitimate means, each and every breeder be prevailed upon to advance the popularity and importance of our State among the Shorthorn breeders of sister States as it justly deserves. I would also urge and recommend that steps be taken to publish annually the proceedings of our conventions together with a Directory in pamphlet form, inserting the address of every breeder in the State, and a very condensed description of his

herd. In a like manner as the State Horticultural Society the Indiana State Shorthorn Association should have an appropriation of such an amount at least as would enable her to do this. The State Shorthorn Directory part should be similar but more condensed than our present and should be revised and published each year free of charge, then we could secure full representation.

The total receipts for the year from all sources, since my last report, amount to \$161.53.

Disbursements, as per secretary's cash book	\$159 03
Leaving a balance of	2 50
Total	<u>\$161 53</u>
Of receipts, balance on hand last year	\$46 78
Membership fees amount to	23 00
Dues	56 00
Directories sold	7 25
Donation, at fifty cents per member	28 50
Total	<u>161 53</u>

We might make recommendations respecting our present membership fees. We are lower than any other State Association and besides ours is not an annual fee. From my financial report it will be observed that a larger fee is necessary to sustain us and pay off the balance of the Directory debt of \$86.10, besides, it would be well for this association to consider the offering of premiums for Shorthorns at the State Fair.

E. S. Frazee, Treasurer of the Association, submitted the following :

TREASURER'S REPORT.

January 26, 1888, paid Walter J. Quick \$63.68 as follows :

Expressage on directories	\$0 40
Janitor's fees	1 50
Stenographer	15 00
By cash	46 78
Total.	<u>\$63 68</u>

January 26, 1888:

For membership fees and dues	\$53 00
Balance on closing year	46 78
Donations	14 50
Directories sold at meeting.	6 25
Total	<u>\$120 53</u>

Credit by balance on hand from 1887	\$2 65
Credit by balance on above.	30 00
February 28, sent W. J. Quick on Robert Mitchell's order	30 00
Leaving a balance in treasury	2 65

Judge Buckles, E. S. Folsom and Joshua Strange were appointed a Committee on Officers' Reports.

J. Strange, Judge E. B. Martindale and Ezra Swain were appointed a Committee on Resolutions.

E. S. Folsom, R. H. Phillips and J. M. Sankey were appointed a Committee on Revision of the Constitution.

The committee on President's address through the chairman, S. D. Batty, submitted the following report: "The recommendations made by the President in his annual address meets the hearty approval of your committee, and we would urge upon the Association such action in regard to them as may be to the best interests of the breeders of shorthorns."

Judge J. S. Buckles, Delaware County. It is known now, that the Sanitary Commission Bill before the Legislature will come up for action soon. I do not know just what is in that bill. A little while ago I received a request that our association this afternoon pass a resolution asking the passage of that bill. The bill I understand will come up for action this afternoon and a resolution would perhaps be of importance. If any gentleman here knows just what that sanitary commission bill contains, and how far it agrees with the one proposed two years ago, perhaps we can go on and pass a resolution this afternoon, otherwise perhaps we could not. If this can not be, I suggest we have a select committee to investigate this matter.

Robert Mitchell, Gibson County. The suggestion of having a committee appointed is a good one. Judge Buckles two years ago labored hard to secure the passage of a sanitary commission bill, but failed. It passed both Houses and the "dead lock" came on and stopped it. I understand the same bill is now taken up and somewhat changed. I think it would be wise to have a committee appointed.

J. Strange, Grant County. There is another matter in connection with the industries of the State. This Sanitary Commission bill should extend to the industrial interests of the State. The Wool Growers appointed a committee to confer with a similar committee from this organization. There is going to be considerable discussion on that bill before it is passed. It don't meet the live stock interest of the State as well as that one presented two years ago, and is not altogether in the shape that would be most desirable to the stock men. We want a Live Stock Sanitary Commission that will cover the live stock interest of Indiana. This bill leaves out one of the leading interests of the State, that is the investigation and suppression of contagious diseases among swine. In originating a Live Stock Sanitary Commission no stock should be left out of the bill. It should cover the entire scope. There is now before the Legislature a bill for a small appropriation for investigating the character of the swine plague. It should come under the provisions of this bill. We ought not to originate two laws to cover similar interests. It would be well, I think, to have a committee appointed to confer with the committee from the Wool Growers' Association, and that they confer together and recommend that such a committee be appointed by the Swine Breeders.

Judge Buckles. I want to say, in justice to myself and others, that when the Live Stock Sanitary Commission bill was framed two years ago, it embraced what my friend said it should embrace. I supposed that was the way to do it. The

Swine Breeders met and entertained a different opinion. As the apparent author of that bill I went before the Swine Breeders and tried to convince them that they were mistaken, but was not successful. They said I must take a part of the loaf or none at all. I said to them if nothing else would suit we would have this bill amended so as to leave out swine, and the very language of the present bill was inserted in the original, with regard to swine. It could not be amended in the House and went to the Senate, but the "dead lock" came on and it could not be amended before reporting it to the House. I consulted with the Swine Breeders, and agreed to let it go and do the best we could and try to get the Swine Breeders' bill through. It was possible to get this in the Senate and not go back to the House, thus keeping it from the Governor. With this understanding with the Swine Breeders we decided to do all we could to help them, if we did not get our bill through. Now if our friends, the Swine Breeders, are willing, and it is not too late for them to be included in the provisions of the bill, I would heartily concur in the arrangement, but I can not control the Swine Breeders, as they have an opinion as well as I have. We can not pass this through the Legislature without the Swine Breeders making war on it, unless the present Legislature is of a different opinion in a stock point of view than the one two years ago. What we had better do I do not pretend to dictate, but I would favor the appointment of a committee to see if there is any different views in this matter.

D. L. Thomas, of the Swine Breeders' Association. We have a bill in the Legislature of our own, but don't aim to antagonize the Shorthorn bill at all.

Mr. Nelson. I move that a committee of three be appointed, with Judge Buckles as chairman, to examine the bill now pending before the Legislature.

The motion carried, and the Chair appointed Messrs. Buckles, Strange and Christian as such committee.

Mr. Shaley, of the Shorthorn Gazette, was appointed to solicit new members.

D. L. Thomas, of Rushville, read the following essay on the

FLUCTUATIONS AND DEPRESSIONS IN THE CATTLE MARKET—CAUSES AND REMEDIES.

No market can continually flourish. Such a thing would be inconsistent with the business affairs of life. But when the fluctuations in the market of any given commodity continue downward, followed by long depression, those interested should institute a vigorous inquiry into the causes, and provide remedies. Self-interest should prompt such action.

To my mind there is a ready solution for the subject assigned me. Perchance, there are some things which affect the cattle market in a legitimate way. There has been, of late, a wonderful impetus given to poultry raising. And the large quantity sent to market during the winter months has affected the consumption of fresh beef. This has a tendency to keep down fancy prices. But it does not account for the general and continued decline in the cattle market. The leading cause of the depression are illegitimate and unjust to American farmers. The increase in the number of cattle does not keep pace with our increase in population. Hence, there can not be an over-supply. Why, in Indiana, the number of cattle in 1888, did not exceed the number in 1860, by quite 300,000; and was 3,000 less

than in 1880. And I take it that these figures will fairly represent the general situation in the agricultural states. Just think of the number of cattle remaining almost at a standstill for thirty years in our growing State!

Monopoly, which the Rev. Mr. Talmage aptly characterizes as the overshadowing curse of our country, is a direct cause for the general stagnation. The dressed beef monopoly has reached such magnitude as to concentrate the business in the hands of a few men. The inferior Texas beef is now shipped to the few great dealers and canning establishments, where the poorest is canned and the best shipped all over the country to the local markets, and so handled as to break down the home markets. This enables the monopoly to control both the local and general market. This, if unchecked, will soon totally destroy all profits to the producers of beef in the agricultural states. It is so far-reaching that it will wipe out the local markets for home grown beef. The Butchers' Association were the first to sound the alarm, for this monopoly threatened to annihilate their business. More recently the great Cattle Growers' Convention at St. Louis, took decided grounds upon this question. The protection demanded is to require local and State inspection of all beeves before slaughtering. This, too, will protect consumers from being imposed upon with diseased beef. As the matter now stands the Chicago dressed beef monopoly is reducing the price of cattle to the producer and increasing the cost to the consumer. But the outrage can be remedied by the passage of State live stock inspection laws. Such a law would protect both producer and consumer.

In addition to this *direct* cause there is an *indirect* but equally potent cause for depression. We have heard a great deal about "protection to American industries." It is a pretty song. Many farmers have become so infatuated with its melody, and so sublimely philanthropic, that they would apparently prefer to protect everybody else in preference to themselves. Now, let us get down from that ethereal barren ideality, and consider real, genuine protection to the farmer. We are dreadfully particular that the "free-trade Britishers" shall not openly compete with us in our markets. If they wish to sell in our markets they must pay tariff duties. Yet we allow those aristocrats who live in splendor across the waters to send over their money free and buy and control our railroads, pay nominal taxes on the same, and shoot up freight rates so that the farmer has to pay extortionate freight to get his cattle to market. If there is any reduction in rates it is in favor of the dressed beef monopoly.

Now, wealthy foreigners, with a few Americans to give it tone, buy up empires of public lands. Much of it is obtained through pretended old Spanish grants. It is so easy to trace a claim of title away back into the misty past to some imaginary Spanish nobleman. Before recognizing the validity of such claims did you ever hear of the government of the United States sending to Spain to see whether such claims were genuine or fraudulent? I call to mind no such instance. Upon those lands cattle ranches are located. Those vast tracts of land are not subdivided, hence not taxed. The bulk of their cattle is not reported to the assessing officer, hence not taxed. Those foreign magnates graze the government lands free. We furnish troops free of charge to protect them and restrain

the lawless and subdue the Indians; and, if need be, a tribe of Indians is removed from its reservation to make more room for those noble lords. Those ranchmen raise and sell cattle at a price which defies competition from the American farmer.

But the farmer is lauded as the "bone and sinew" of our land, flattered and hoodwinked until he can scarcely see his own interest. He pays high taxes on every foot of land he owns; not a hoof escapes the enumeration of the assessing officer. In short, he comes nearer than anybody to paying full tax on everything he owns. He helps protect foreign landlordism, while said agency is pinning him to the wall in beef production. Yet the guileless farmer lies supinely on his back, hugging the delusive phantom of hope while this great industry languishes, except quadrennially he springs to his feet and shouts, "Hurrah for protection to American industry!"

Then the "last straw to break the camel's back" is monopoly taking possession of the finest lands in the world just across the border in Mexico. Until recently said lands were the raiding grounds of savages. But the two governments have subdued the savages and the ranching monopolies, which have been fostered under the ægis of the American flag, have stepped in and occupied the lands. No taxes whatever are to be paid upon those lands, for the capitalists are the rulers of the country. The annual tax upon their cattle is about three-fourths of one cent per head. Herders are employed at one-half the cost that they are in the United States; so that it costs almost absolutely nothing to produce beef. Those ranchmen have full-blood Shorthorn, Hereford and other imported males, and are rapidly grading up their cattle to supply our markets. The tariff duty is twenty per cent. of the valuation. The custom officer values three and four-year-old steers at \$10 and \$12 per head, which makes the tariff \$2 to \$2.40 per head. Then that cheaply-produced beef competes with the production of the American farmer in his own market.

I can see no good reason for range cattle straying across the border either way. Herders are supposed to be in charge of them. But ranchmen who own land along the border—some of them owning land on both sides of the line—claim that their cattle do stray across into Mexico, and that it is a hardship for them to pay duty when they bring back their cattle. So there is a bill pending before Congress to allow those poor fellows to return such cattle free of duty. When that bill becomes a law it will be so easy to let the Mexican cattle *stray* across to our side and go to our markets *free of duty*! Then the next step will be for the "rulers of this country"—the capitalists—to have Congress pass a law which will permit them to bring in their Mexican cattle free of duty. All they will need to do will be to secure the nomination of their friends for Congress by machine methods, and then get up a warm political campaign and have the farmers ratify the very thing that is financially to cut their throats. You have heard of the fable of the fox and the crow. That fable illustrates the case in hand. "Rulers of the country" are the foxes and the farmers the crows, with this difference: The foxes get the crows to help kill any of the crows that sound the alarm. As a proof of this you need only look at Congress. Every member who stands up in Congress and defends the people's interest as against monopoly fails to return to Congress. This is true of both Republicans and Democrats. And farmers blindly fall into the trap and

vote against their own interest. Now, what are you going to do about it? If the state of affairs which I have depicted continues it will be a monument to the stupidity of the American farmers. The first step toward a remedy is to stop sucking the exhaust wind of political bag-pipes, and to *study* and *act* in your own interest. Instead of being dragged into it as a political or party question, make it a *pocket-book* question.

Demand 1. A State law for the inspection of cattle on hoof before slaughtering.

2. That Congress shall absolutely prohibit foreign landlordism.

3. That all public lands illegally obtained be forfeited.

4. That ranches either sub-divided or not sub-divided shall pay their full proportion of taxes.

5. That ranch cattle and property be duly taxed as other property.

6. That rent be paid for grazing public lands.

7. That cattle which are imported from the States of Mexico shall pay duty according to value, and that the rate of duty shall be placed at such a figure as will protect the farmers in the agricultural States.

The market has reached its lowest ebb. A measure of relief will come from natural causes. The continued depression in our markets has caused a decline in breeding cattle. An unusually large proportion of cows have gone to market, so that the supply of cattle will be visibly affected for some time. This will improve the market in the near future; but in my judgment full relief can not be obtained short of the measures suggested in this address.

DISCUSSION.

Judge E. B. Martindale, Indianapolis.—This opens a wide and speculative field. Every man may have his opinion about the condition of the markets. I do not think my friend has based the cause properly in his address. Every dollar of capital raised in Indiana, so far as I know, and expended in the production of cattle on the plains, have been lost to the men who raised it. We must get at the facts. The cattle production on the plains was profitable at the start. They may be hard up at times for winter pasture, but there is unlimited pasture in the United States. Pastures sometimes get very short and winters severe, and in some cases 40 or 50 per cent. die and it wipes out the capital invested in it. I had a conversation with an intelligent gentleman from New Mexico recently, and he said our Indiana people had an idea that all they had to do was to take a herd of cows and put them on the plains and make money. They think it is like herding cows on the prairies of the older States. It requires more intelligent men to herd cattle on the plains than to run a farm or practice law in Indiana. You have to know the entire condition as to what the habit of the cowboy is, and what is expected to establish success. The result is they have not been successful. There has been no dividend struck in the last four years. When I look at the cost of beef I notice that here in Indianapolis it costs 2c more per pound to get tender loin steak to go on the table than in Chicago. To-day a great deal of the steak you eat at Indianapolis is not raised near Indianapolis, but is brought from

Chicago because the hotel people here can go there and buy it 2c cheaper on the pound than they can here. The monopoly is with the packers. It is either shipped on the hoof or slaughtered and shipped in refrigerator cars to the East, and is in the hands of a few men. My steers have been fat for 20 or 30 days; I may bring them to Indianapolis, but am governed by the Chicago market. If you have a drove of hogs the papers show you what you are going to get for them, but if you have fine steers you are subject to the whims of drovers, and you have to stand and feed a few days and then take the price you are offered. The best cattle are shipped to the East from here. Those coming from the West are slaughtered at St. Louis and sent East in refrigerator cars, and the business is controlled by a few men. So far as the question of protection is concerned I do not know that I would like to enter the pool of politics and discuss that subject. I have a theory, and no doubt every one here entertains an opinion, though it may be different from mine. Every one of us know, if we know what our interest is, we fight according to that interest either for tariff or free-trade. General Hancock was not far wrong when he said it was a local question. The wool-growers were in session here yesterday, and it was hard to find any among them but what were protectionists. Everyone will vote according to his interest. I would as soon trust the farmer to take care of this as any other class of men I know of. My experience in trading with them is, they generally get away with me. [Laughter.]

J. B. Conner, Indiana Farmer. There are some important points in the paper just read and Judge Martindale has alluded to some of them. In regard to the deficiency of the number of cattle, there were less in 1888 than in 1880, but there is an increase of more than 20 per cent of weight in cattle, according to the market statistics in the last ten years. The same governs in the matter of the hog product; the average weight of swine increases and so with cattle. All scrub cattle give way to better breeds and the same is true with hogs, so we have a better breed of cattle and swine than formerly. It is better blood. I think the paper does not account for the deficiency. This dressed beef question is important and confronts not only the raiser of beef cattle but must affect the interest of the fine stock breeder. Judge Martindale has alluded to that and to the ranches. It was my pleasure to be in Montana last year and while there I visited one of the large English ranches. A young Englishman was there in possession of stock, both horses and cattle, he had been sent there from England to get rid of him from the family at home. He was making money rapidly but spending more than he made. He received \$35,000 a year and could not make both ends meet. I visited two other ranches in the west and this was a representative one. This dressed beef matter is a vital question and should come before the legislatures of the agricultural States. Bills are, and have been introduced in some of the western States for the regulation of this industry. Two, three, or four packing and canning establishments control very largely the markets of the country. It is known in this city that in order to get their product on the market they have established small shops and put down the price to a mere nominal sum to drive out the local butchers. They keep the price down until they drive the butcher into the buying of shipped beef, or drive him out of the business. It is confined to these packing establishments. When

two or three hundred thousand people are to give away to two or three men it is something we should look after. This recommendation in the matter of legislation, to look after our local markets, should be had in all the States. While it does look to the consumer that he is benefited by these packing establishments, often they are not a benefit to him. These monopolies have the market alone and they put the price of beef up to suit themselves. So the local market and consumers are not benefited, the market is broken down and the producers are suffering from the loss in the market. This particular point should be referred to this legislative committee and see that this bill may be furthered to maintain the local market.

D. L. Thomas, Rush County. In regard to the suggestion of Mr. Connor that it would be right to have some legislation for the regulation of our local markets. We should have a bill passed making it compulsory on the City Council to appoint a meat inspector upon the recommendation of ten reputable citizens. As to this cattle ranch business, it affects the price of your cattle. These Englishmen come over here and gobble up large tracts of our land, and it is as much of a monopoly as our beef trade. This is what they are doing while we are trying to protect ourselves against the monopoly in the cattle interest. I am in favor of protection when it is to our interest. I wish to say these ranches have a demoralizing tendency in the beef interest of our country. Cattle and sheep are brought from Texas and sold in Kansas City at \$1.80 per cwt. Those men who have gobbled up our land pay no taxes on land nor cattle. These foreigners who come here are protected, while we are not, and that brings down the price of your cattle. At the same time these men control a good portion of our Western States. The paper was written after a thorough investigation of the ranching business, and I have the documentary evidence from which my conclusions are drawn.

Mr. Mitchell. There is one point in this paper of which I wish to speak. That is in relation to this inspection feature. Now, the farmers know to their bitter experience that when the wheat crop is sold it is inspected in the interest of the buyer and not the farmer. Now, I hold that this inspection could not be done in every little town, and all would have to have their beef shipped. If this point of inspection should be located in Indianapolis you can not afford to send your cattle there to be slaughtered or to be inspected and driven back again. It does not give relief. If it brings relief I am in favor of it, but I can not see that it does. At the Chicago Convention Mr. Washburn wanted everything inspected. Diseased meat should not be put on the market, but is it advisable for us to say that we want inspection for the killing of all cattle in the State. I am satisfied our wheat inspections are made in the interest of the buyer, and I do not want to put the interest in anything where it does not properly belong.

The Committee on Revision of the Constitution, through its chairman, Mr. Folsom, submitted the following report:

Your committee, having had under consideration the question of revision of the Constitution, would recommend that article 3 be amended so as to make the membership fee \$2.00 and the annual dues \$2.00.

Judge Martindale. I move that we amend by making it \$2.00 for new members and \$1.00 for yearly dues.

The report was so amended and adopted.

“WHY BREED SHORTHORNS?”

Was the subject of an address assigned to Hon. J. S. Buckles, of Muncie. Not having prepared a paper for the occasion, Judge Buckles said:

“On account of the sickness of my wife I have been deprived of doing much writing, my care and attention having been turned towards her. She died in September last, and since that time I have not written a line for publication. I will say, however, if the Association will wait I will promise to read an article on the subject assigned me at our next annual meeting, life and health permitting.”

E. S. Folsom, of Indianapolis, read the following paper on the

EFFECTS OF ENSILAGE AND BEETS AS WINTER FEED.

When your committee assigned to me this subject, it demonstrated that even wise men may make mistakes. In the language of one of Indiana's noted Governors, it should have selected “a more abler man.” In this short paper I shall enter into no detailed description of the silo, its cost and mode of construction. These may be considered in your general discussion. Neither will I enumerate the various food plants, adapted to our soils and climate, which may be preserved through the aid of the silo in a sweet, succulent condition, as a winter stock food. I will consider briefly the forage plant and its feeding value, that experiments and practical feeding tests have demonstrated can be produced at the least cost, taking into account the value of our lands, and the food value of the plant. Until the discovery was made that green forage plants could be preserved so as to retain their succulent juices, the only practical means of supplying a green food ration, so much desired in winter feeding, was by the production and feeding of roots, such as turnips, beets and mangolds. These, when fed as an aid to digestion, prove a valuable supplement to the dry food. When made the greater part of each day's rations, inasmuch as they contain only from eight (8) to twelve (12) per cent. of solid matter, the balance, from eighty-eight (88) to ninety-two (92) per cent. being water, their feeding value is too limited to warrant extensive feeding with profit. When again we realize that the greatest part of the cost of a root crop is the labor—that the same labor that produces one acre of roots will produce ten acres of ensilage corn—that with our cheap lands, valued at from twenty (\$20) to seventy-five (\$75) dollars per acre, and labor at from one dollar (\$1) to one dollar and a half (\$1.50) per day, the feeding value of roots is not equal to the cost of production, except to be fed in limited quantities simply as a stimulant or aid to digestion. When fed in such quantities they impart such additional value to the dry food, rendering it more digestible, as to make them, in the absence of other green foods, an invaluable production. The feeding experiments and analyses of our various

forage plants, made at the agricultural experiment stations, as well as practical feeding tests, award to the ensilage corn first place as a nutritious and cheap winter stock food.

When ensilage corn is harvested at the proper time, which is at full maturity, but not ripened, it contains its greatest amount of nutritive matter, hence its greatest flavor, and if properly preserved in the silo, the flavor is all retained and it is eaten with as much avidity and relish as when in the green state before it enters the silo.

We can not expect to take out of a silo more than we put in. Yet some feeders of ensilage claim, that indirectly we can. That in the process of preserving, the ensilage having been brought to a heat of from one hundred and twenty-five (125) to one hundred and thirty (130) degrees, the same chemical changes go on as in the first stages of digestion after the food is taken into the stomach of the animal—hence, the silo having performed a part of the work in digestion, there is a saving of vital energy, and thus the food value of the plant is greater, after having gone through these chemical changes than before it entered the silo. The feeding tests at these experimental stations, giving to ensilage corn first place as a cheap and nutritious winter stock food, is fully endorsed by the practical stock feeders, in the districts where dairy farming has come to be the leading agricultural industry, and where profit is the object for which they are conducting their business.

To feed ensilage alone is to take the other extreme. To obtain the best feeding results, at least one ration of each day's feeding, should be clover or timothy hay, cut straw, or dry cut ensilage corn or corn fodder. A mixture of two-thirds ensilage and one-third cut hay, straw or fodder, is perhaps better still, as the dry and green food is then taken into the stomach together and in rumination, the dry food absorbing the juices of the green, a greater per cent. of the dry food is digested, and this too with a less tax on the digestive organs than when taken into the stomach separately. Again the dry food absorbing the juices of the green, there is less tendency to a laxative condition of the bowels, which is liable to follow, where the ensilage is fed separately, which should be carefully guarded against. When ensilage corn possesses a wealth of ears, as was the case with last year's crop, and the mixture is ensilage and cut dry ensilage corn, no additional grain ration is required. When the mixture is ensilage and cut straw or fodder, a light grain ration each day is required for the best results in feeding. That I might arrive at the cost of production and feeding value of ensilage corn from trustworthy and practical sources, I visited some of the leading producers and feeders of ensilage, last year at the beginning of the season for filling silos, and arranged whereby the expense of harvesting their crops and filling their silos should be carefully kept, together with the amount of ensilage secured, and these statements were placed at my disposal. The following is a sample:

LAKE MILLS, WIS., December 24, 1888.

E. S. Folsom:

DEAR SIR—Mr. Fargo's estimate of 35 to 50c per ton as the cost of filling silo is liberal enough, as you will see by the following statement of the working of my gang of men. Of course I presume on the crop being within 160 rods of silo.

My power, as you may remember, is an eight-horse Taylor (sweep), on which power I use only four horses, finding that amount of power ample with a 20-inch knife cutter and an extra long (thirty-two feet) carrier, which drops the ensilage in center of silo, thus economizing labor of handling same therein. As you say, the team costs a farmer nothing and need not be estimated.

The following is a very liberal estimate for labor as I worked in filling silo:

Driver of power (horse), any boy can do it, counted as a man.

Feeder of machine for cutting.

Man to unload wagon to feeder.

Two men and three wagons to draw.

Two men to help drivers load in field.

Three men to cut and drop in field.

One man in silo (I used him only in last half of filling). Total number of men, 11.

At \$1.50 per day each, \$16.50 or \$1.65 per hour, I drew on an average 2,500 pounds or 1½ tons. Time of cutting run from ten to fifteen minutes to a load. Count it, including stops, fifteen minutes, gives five tons an hour or 33c a ton. You see I have based this estimate on what men cost hired by the day, boarding themselves, and with an extra liberal amount of help. At the rate of usual compensation for farm labor 25c per ton would be nearer correct.

I have never had much experience in raising roots to feed stock. I raised roots one year, that was enough for me. The prices we get for dairy and beef products are insufficient to enable us to pay for the labor of raising roots to feed. I think ensilage properly fed renders the raising of roots unnecessary. I do not think ensilage any better than roots as an exclusive diet. I am feeding for morning feed, clover and orchard grass hay. Evening feed, a heavy ration of half and half dry unhusked and husked corn stalks run through a feed cutter and mixed with above an equal bulk of ensilage. This is the most satisfactory thing I have found in the line of cheap feeding. The corn in the unhusked stalks gives a sufficient grain feed, and with the dry stalks makes such an addition to the soft ensilage as to give cattle something to chew on, that is harder and more substantial than ensilage alone. This system of feeding is original with me so far as I know, but is being adopted by several in this vicinity with approbation. I noticed more or less scouring in cattle fed wholly on ensilage; also an abnormal craving for something dry or more substantial to chew while being thus fed, such as straw, poor marsh hay, or rotten wood. With the mixture they seem better satisfied, and their manner is of that consistency indicating healthy normal action of digestive organs.

The more immature ensilage corn is cut and fed in silo the greater seems the necessity of mixing it with dry stalks or other dry substances. I am of the opinion that most ensilage is harvested too immature; that the kernels should be half dented to be at the best stage.

Truly yours,

W. P. PHILLIPS.

Prof. Johnson, President Michigan Shorthorn Breeders' Association. After some years of experience I have no hesitation in saying, that every shorthorn breeder will do well to give attention to this economical method of preserving fodder. One winter's feeding of the well preserved contents of a good silo, will convert the most doubting Thomas among you, into a firm believer in the system.

This statement, covering the entire expense from the beginning of the work to the close of the silos, has been kindly furnished me, from which I obtain the following results: The average cost for filling one silo, which includes the entire expense from the cutting of the corn in the field to the close of the silo, not taking into the account the use of teams and machinery, was thirty-three (33) cents per ton.

Two other statements make the average cost exclusive of the use of teams and machinery about forty (40) cents per ton. These expense accounts were kept by intelligent, practical and conservative men with several years' experience with the silos and their accuracy need not be called into question. Taking the highest figures, viz.: Forty (40) cents per ton as the cost of harvesting and ensiling, let us ascertain the cost of producing a crop of ensilage corn ready for the harvest.

I herewith give the estimated cost of producing ten acres of ensilage corn, which I think any practical corn raiser will admit is a liberal one, as the cost is the same as that of an ordinary corn crop, with perhaps the exception of the cost of one plowing in favor of the ensilage. In this estimate I take no account of the use of teams and machinery, as these items are usually omitted by the farmer when estimating the cost of producing a crop:

1. Fertilizing	\$20 00
2. Breaking 10 acres, 6 days, at \$1 per day	6 00
3. Preparing ground and seeding, 6 days, at \$1	6 00
4. Seed for 10 acres at 50 cents per acre.	5 00
5. Cultivating 10 acres, 4 times with double ploughs	8 00

Cost of ten acres of ensilage \$45 00

At twenty (20) tons to the acre, which is only a fair average yield, we have	
the cost to produce one ton of ensilage	\$0.20½
Add to this the cost of harvesting and ensiling	40

And we have the cost of producing, harvesting and ensiling one ton of ensilage corn \$0.60½

In this estimate it will be observed I have taken no account of the use of teams and machinery, assuming that the farmer of necessity keeps them for general farm work, whether he raises ensilage corn or not. If to the items of expense enumerated we add the use of teams and machines, interest at six (6) per cent. on the value of the land and cost of the silo, we have the following, which should be the market value of ensilage, as every item of labor, as well as use of capital employed, is paid for in full:

1st.	Fertilizing 10 acres	\$20 00
2d.	Breaking 10 acres, at \$1.75 per acre.	17 50
3d.	Preparing ground and seeding 10 acres, at \$1.75 per acre	17 50
4th.	Seed for 10 acres, at 50 cents per acre	5 00
5th.	Cultivating 10 acres four times, at 50 cents per acre	20 00
6th.	Ensiling 10 acres (200 tons) at 60 cents per ton, 50 per cent. added for team	120 00
7th.	Interest at 6 per cent. on 10 acres of land, valued at \$60 per acre, \$600.	36 00
8th.	Interest at 6 per cent. on cost of silo, \$200.	12 00
9th.	Use of machinery.	10 00
Total cost of 200 tons of ensilage.		\$258 00
Average cost per ton		1 29

The feeding value of ensilage, as compared with that of timothy hay, is two and a half tons of ensilage to one ton of hay. One acre of ensilage (20 tons) to eight (8) tons of hay. Since the cost of ensilage is \$1.29 per ton, and two and a half tons of ensilage equals the feeding value of one ton of hay, to place the two on the same financial basis the market value of the hay must be \$3.22½ per ton. To feed ensilage alone a full day's rations is forty (40) to fifty (50) pounds to each animal. If fed in connection with dry food, as in the mixtures heretofore stated, from twenty-five (25) to thirty-five (35) pounds is required. To feed an animal, therefore, six (6) months, one hundred and eighty (180) days on full rations of ensilage, forty-five (45) pounds per day, will require eighty-one hundred (8100) pounds, or about four (4) tons. The feeder, therefore, estimates his supply for the feeding season at one acre of ensilage corn for every five (5) animals to be fed. To feed twenty (20) head of cattle would require four (4) acres of ensilage or eighty (80) tons, which, at \$1.29 per ton, would cost one hundred and three dollars and twenty cents (\$103.20), and is equal in feeding value to thirty-two (32) tons of timothy hay, which, at twelve dollars (\$12) per ton, the average market price now at the feeder's door, amounts to three hundred and eighty-four dollars (\$384). Here is a difference of two hundred and eighty dollars and eighty cents (\$280.80) in favor of the ensilage. Quite a nice profit, is it not, on the feeding of twenty (20) head of cattle by improved methods?

What must we conclude from this? That we are improved cattle breeders, but scrub feeders? If so, how far are we in advance of the scrub cattle breeder and improved feeder? If, after having knowledge of these improved methods of feeding, and with sufficient time to put them into practice, we still insist on doing scrub feeding, let it be with the scrub, for then we will never be disappointed when we part with two dollars' (\$2) worth of feed and get in return one dollar's (\$1) worth of beef or dairy products.

If, therefore, we expect to do more than keep abreast with the improved feeder of the scrub, if we expect to place the red, white and roan at the head of the procession as producers of cheap beef and dairy products, we must come to the front with the feeding problem solved, and be improved feeders as well as improved breeders.

DISCUSSION.

E. S. Folsom. The estimated cost of a silo of a hundred tons is \$100. These silos are built above ground; cellars are a failure; the ensilage will mould.

Judge E. B. Martindale, Indianapolis. Some months ago my attention was directed to this kind of feed, and I made some investigations. Upon the question of product and results I can say this, that I think in Indiana where land is cheap and rich, and where most farmers own from 160 to 200 acres of land, I conclude that it does not pay to experiment with silos and ensilage, if they can put up fodder and clover hay which will make good feed. It will do for those Yankees and Wisconsin farmers who can not raise much grass, but they can not produce anything that will fill the bill better than good bright clover hay. We can not succeed very well in raising feed on clay land without considerable enriching. Beets yield immensely; the result of four rows of beets as an experiment, my men gathered in from them twelve wagon loads; but I would not raise them for feed, unless it was for milk cows. You have them to watch as they are very liable to decay, and give you trouble in this way. They are a nice thing for mere diet as flax seed cake, but when you undertake to make a business of raising beets for your cattle, when a man has plenty of land, there is no money in it, and it is the same way with ensilage. When I go to work and fill this silo with corn, I have to have it cut up before feeding, and I am under necessity of getting a machine for that purpose; the machine costs too much, and when you go to feed it out you find frequently it is a little sour. The whole thing is a theory. I have worked with it enough to know that it is not equal to our standard crops. If you are short of hay, if you will sow German Millet you will get an immense amount of hay off of a small piece of ground. I cut, it seemed to me, as much as eight tons off of an acre, and worked three or four days to get that hay stirred up so it would cure. [Laughter.] If you plant beets on upland that is a little thin, they do not do so well, but if you put them in rich land you will have beets that will astonish you. The fact is with the farmers, in regard to beets and ensilage, it is all a theory, you want to get back to clover hay, cut it up and put hominy meal on it and it is good enough for my Shorthorns. The fodder we put up now don't cost us much. From present indications we will have more fodder than we will use this winter; it don't keep in the spring. There is no better feed than good fodder. Give your cattle mixed feed, and fodder for rough feed, and they will do well on it. You go ahead with your silos and the first thing you know you will get into the assilo (asylum). [Great and continued laughter.]

E. S. Folsom. There is no better feed than corn fodder put in the silo in the fall. The expense of cutting it and putting it in the silo is no more than putting in the shock. The difference is, one is standing in the field and the other is in the silo. The fodder standing in the field exposed to the weather will decay. The ensilage in the silo will settle one-third in bulk when put in, in the proper condition. I believe there is great economy in putting up this kind of feed for our stock. It can be handled and placed before the stock much easier than fodder in the old way. There is no question but what corn fodder put up in this way is of very much more value than the way farmers have been in the habit of feeding it

in the past. At the experimental station where they have been testing the full value of the stalk they award to the leaves one-third of the feeding value, one-third to the upper half of the stalk, and the other one-third to the lower half, which we throw away. By this method of feeding the entire stalk is utilized.

Mr. Higgins. This is a great question, and I would like to say something about this corn fodder business. We could spend our money on the farm very advantageously, and in place of building silos to save our fodder we should husk out our corn and tie up the fodder so it will keep, and thereby realize much profit out of it. I am of the same opinion as my friend across the way, that the silo is not the thing for the common farmer. We plant ten acres, cutting it green for the silo, we derive nothing but fodder, but if you put it in corn and let it mature, you get your fodder and perhaps 75 bushels of corn to the acre. Then take our machinery and cut up the fodder, mix with crush corn and sheaf oats, and we have better fodder than that in the silo.

Mr. Mitchell. They have machines for threshing out corn the same as wheat, putting the corn in the half bushel, separating the husk and fodder from it. This is going to be the system of feeding in the future. It is literally chewed to pieces, and there is your pile of pulverized feed in good condition. It is cheaply done, and I think it will be practiced here soon.

E. S. Folsom. You seem to lose the point of green feed. Those men raising ensilage want to use one-third to one-half dry feed, but we want to know how to preserve green feed to feed in winter. We can do this with roots, but it is too expensive.

W. F. Christian, Indianapolis. I have no objection to ensilage, but we are not Yankee farmers here and have too much surface to go in that business. I have been experimenting with roots somewhat and find it don't cost me very much. My land is clay land but I apply manure and raise three or four tons of roots to the acre. I bank them up in the ground and have no difficulty in keeping them. I open out my hills about this time of year and commence feeding to my calves. I have a machine with which to cut them in small slices, so they may be easily eaten. I have also a corn-crusher with which I crush my corn and make meal, I take this meal and sprinkle over and feed to my calves and cows with calves, and it keeps them in fine condition. The estimated cost of silo is \$1.00 per ton. I can not cover 200 tons and keep it from souring for \$200. Taking all into account, there is no better feed than corn fodder. I think we should try to instruct others in these things by telling them how we are feeding and what we consider is the best kind of feed. I am grinding or cutting these roots and sprinkling them with meal for my calves and milk cows and cutting my corn fodder. I feed none of my fodder whole only when I turn the cattle out through the day, where they can go and nibble it. I would like to hear from other gentlemen on this question.

Mr. Folsom. Have you kept any account of the expense from the beginning to know what it costs to produce a ton of roots?

Mr. Christian. I have not.

Thos. Wilhoit, Henry County. If I want to feed for fat I will take clover hay, mix with bran, corn ground coarse and a little oil meal. Fodder is good feed, never had any cut or threshed, but let them eat it out of doors. Clover hay is

the cheapest and corn fodder next. Fodder we can feed through the winter out of doors. As to having any experience in cutting and threshing fodder, I don't know anything about it.

E. R. Moody, Eminence, Ky. We think sorghum is good feed in Kentucky. Throw it out in the fall on the blue grass, cattle will eat and relish it greatly. We cut it up just like corn and shock it, letting it dry and then haul it in the barn. We have plenty now in the field as good as it was last fall.

Mr. Wilhoit. Do you raise it about the same thickness, as when raising for molasses?

Mr. Moody. We grow it very thick.

On motion of Col. Gault committees were appointed to draft appropriate resolutions concerning the deaths of Dr. A. C. Stevenson and Charles Miller, as follows:

Messrs. Gault, Nelson and Martindale on the death of Dr. Stevenson, and Messrs. Cotton, Frazee and Shaley on the death of Chas. Miller.

Thos. Nelson, E. S. Folsom and Thos. Wilhoit were appointed on programme for 1890.

Adjourned to 7:30 P. M.

EVENING SESSION.

The association was called to order promptly by President Mitchell.

Isham Sedgwick, Richmond. Last year we suggested something about pedigrees. We realize somewhat the cumbersome and inferior plan of recording pedigrees at present. Now, by the plan which I wish to present, we may have a pedigree that will be worth something to us; instead of having a bare index of the animal we have a complete history of it. I have been studying over the subject for the past year, and am able to show you something this evening on which there are thirty complete pedigrees, and had I been able to have the herd-book I could give you date, birth, color, sex, name of breeder, date of sire, his color and breeder for every one of these thirty pedigrees, and you can not find this in any book in existence that I know of. It is quite an improvement on the American Herd-Book. A volume of 1,000 pages will hold 80,000 pedigrees. Instead we have some 1,200 indexes of pedigrees to only 15,000. You can see the great difference between the improved plan and the present one. I have explained this plan to several, and they are well pleased with it. At the margin of this table I have taken the imported cow Goodness, running through all the points as to her history. It starts out something like this: Goodness—Color, red; bred by J. Hall, England; recorded in English Herd-Book, giving volume, page, etc. Then the sire is treated in the same way, giving in a condensed form a complete history of the animal. In this margin which I present here you have a complete pedigree of the imported cow in the first column. Out of forty catalogues I found two of her heifer calves recorded. One of these calves had four other calves in the same catalogue I worked over. You now see I use but six short lines, occupying not more than two inches in length and a little over one-half inch in width. I have that pedigree as

complete as the imported cow. In the next one here I use only four lines; occupying less than two inches in length and one-third inch in width, giving date of birth and all that is required in giving a full descriptive pedigree. Each one of these pedigrees are just as complete in connection with the imported cow as this one I have from the imported cow. If I had been able to search the herd-book, there were probably 125 representatives from the imported cow Goodness in the first five generations, including himself, and all that 125 would go on one page. When there is a revision of the American Herd-Book, why not adopt something of this kind, which I think is a decided improvement? It gives us something that is valuable.

We might have in addition to those facts anything that is extraordinary, such as milker or show animal, on the same page. There is another great advantage. Every cow that is non-productive shows on the face of the page that none of her posterity are recorded. Mr. Folsom and I were talking over this matter in the library the other evening. There are 100,000 bulls recorded and perhaps twice as many cows, making something like 300,000 recorded in the English Herd Book, and about 4,000 imported cows, with their representatives, recorded to-day in the American Herd Book. We might get at this in two ways. Take the first thousand of imported cows in the first volume and we would have a complete pedigree for five generations from the imported cows. All that would take a large proportion from the Herd Book, probably from ten to thirteen volumes into one. It would be, in addition to the meager information now given in the present process, we would get many points that would be of great value. We might get at it in another way. In looking over the last two volumes and taking imported cows, we find for the first volume of the Herd Book of all the imported cows having living representatives it would not make a volume of 1,000 pages, and we would get all those living representatives in our first volume. Then, of course, we might have to get another volume for the second generation, revising the American Herd Book and not have more than five or six volumes. You ask, "How are we going to continue recording on this plan?" The gentleman who keeps the record, when he receives the birth of a calf, he will have information that will send him to the page on which the dam is recorded, and he will have to enter that on the original entry in these short words. That is his way of keeping his method together. These volumes would have to be revised in from fifteen to eighteen years, but not necessarily oftener than that. We would have to get a short index that would refer to the place of record, and that would make a volume of 25,000 animals for fifteen or eighteen years, and could be revised at less expense than a revision of print at the present time. Then again, as to consulting catalogues, I find in Mr. Elstel's catalogue he gives in his pedigree the name of each dam, where recorded, the color, and the breeder of each dam; he gives the name of each sire, where recorded, color, and name of breeder. I never have seen any other that does that. His catalogue occupies some forty-four pages. I have looked through it, and all the animals might be fully catalogued on not to exceed five or six pages. T. A. Cotton's catalogue of fifty-four pages—more than half of them will go on one page, and the whole number would be completely chronicled on five pages. So you will see there is quite a difference between my plan and the present method of

recording pedigrees. In reference to reaching some satisfactory result in this matter, one way of getting at it would be for this body to take some action in the way of indorsement of some kind; then it can be sent up to the National Association, and with our representatives to that Association we will be able to get it adopted. All those who know anything of the condition now will be inclined to take to this kindly; but, gentlemen, we must meet this matter in this way if we expect to succeed in the effort. We have thirty-three volumes of the American Herd Book, and I do not know of more than three or four complete sets in the State of Indiana. Then there is another thing. When you are looking up a pedigree you will have to search four or five volumes to find what you want to insert in your catalogue. I have no criticisms to make in keeping the registry of our animals. Probably the course that has been pursued was the best thing that could be done. I have wondered that nobody else happened to strike on this method, but the best thing we can offer on this subject of registry to-day is this plan.

On motion of W. J. Quick, the following gentlemen were appointed a Committee on Registry: Messrs. Folsom, Owen and Conner.

Thos. Nelson, chairman of the committee to draft resolutions in memory of the late Dr. A. C. Stevenson, presented the following report:

REPORT ON DEATH OF DR. STEVENSON.

WHEREAS, In the death of Dr. Stevenson, the last survivor of the charter members of the State Board of Agriculture has passed away. In his death the Shorthorn Breeders' Association of Indiana, has suffered an irreparable loss, as we recognize in him the pioneer in the introduction and importation of Shorthorns into Indiana. We also remember that he was present and presided at the first National Shorthorn Convention ever held. That convention having been held in the city of Indianapolis.

Dr. Stevenson was a man of advanced ideas in all that pertained to agriculture and especially stock raising in all its varied branches. He died full of years, having passed four score. Therefore, for the purpose of perpetuating his memory, be it,

Resolved, By the Shorthorn Breeders' Association of Indiana, that the foregoing memoriam be spread upon the records of said association, and a certified copy be sent to the family of the deceased.

Pending its approval the following remarks were made:

Thos. Nelson, Bloomington. There are members here who were associated with Dr. Stevenson earlier than I. I was acquainted with him for a long while, and always found him to be a man of strict integrity. His word was law wherever he went. He was a man who took great pride in raising fine stock, especially Shorthorn cattle. He was the first direct importer of Shorthorn cattle into Indiana, going to England for that purpose, and imported the bull Fancy Boy and three cows.

E. S. Frazee, Orange. Gentlemen of the association, I fully concur with what Mr. Nelson has said as to my friend, Dr. Stevenson. He was a man on whom

nature bestowed gifts lavishly. He was possessed of more than ordinary intellect, and had a fine sense of honor. As Mr. Nelson has stated, he was the Indiana man who went to England and selected the first importation of Shorthorn cattle that was brought to Indiana. It was a matter of pride to be acquainted with Dr. Stevenson in his palmy days. He was a giant intellectually, a moral man, a man of whom we should all be proud. It was a pleasure to me to be associated with him and instructed in his moral and intellectual worth.

Thos. Wilhoit, Middletown. I endorse all that has been said in regard to this honored man. It recalls to my mind the time he imported those cattle, and I looked to him for advice, and learned much from him. What he said I could rely on as being the truth. He knew what a Shorthorn was, and always took a pride in talking about them. He was an honest, upright man, and father to me in the Shorthorn business.

Hon. Robert Mitchell, Princeton. I can not give the number of years, but I well recollect when the old State House, standing where this grand structure now stands, Dr. Stevenson, Mr. Jackson, and some others, met and formed the first National Association of Shorthorn Breeders. Through his influence this organization took form. Only a few short months ago, many of you recollect, when he came to the State Fair grounds, driven out there in a carriage; he was firm and erect but feeble in his old age. He wanted to see the Shorthorns. He was driven into the ring, where he saw other fine cattle, rivals of his favorite breed. His whole life, almost, was spent in improving this breed of cattle, and there he saw them almost perfection in form and breeding. At the closing days of his life it was his ambition to see them for the last time.

"SELECTION OF CALVES AS FEEDERS,"

was the subject assigned Mr. J. D. Spahr, of Centreville, not having prepared a paper for the occasion, he said: "Can any of you present select calves which in all cases will make good animals? No one! Well I hoped I could find some one who could, for I can not; but I will tell you how I select a calf. Commencing at the head, an animal that has not a good head is not fit for anything, and to have that it should be reasonably short and broad in the forehead between the eyes, and tapering to the end of the nose, with a pleasant eye and countenance. I do not want a lengthy neck to be a good feeder; he should be neat around the throat-latch, shoulder should be tapering, back well set in and not up on the outside. Behind the shoulder the crops should be as full as possible. It should be low, and as full and good depth as possible behind the forearm, which is indicative of good constitution and is highly necessary. The brisket should be prominent, the breast full; the butcher then takes some objection, but the breeder is the best judge on that point. The ribs should be well-sprung and long. The loin should be full and just about level with the top of the hips, and hips not too wide, not extending above the level of the loin and reasonably well coupled up. From the hips back should be of good length. I want the back bone straight to the root of the tail, and from the tail bone down, straight, with a good twist on the end. Good deep flank and

hind leg pretty straight in hock. Fore leg large in arm and tapering well, set on reasonably fine bone and short. For a good feeder I would have him a little paunchy. I have briefly described a calf which on the whole would make a good steer if judiciously fed."

Thomas Wilhoit, Henry County. The gentleman has pretty well covered the ground. The neck I like to see short and a fine bone. The rule he lays down I think is a good one. I want you to understand we must have fine bone. We must have quality first. Give me a steer with a short neck and fine bone, and I will make him fat.

Judge Martindale. I want Mr. Wilhoit to tell us how to feed a calf, unless he has a secret.

Mr. Wilhoit. I let calves suck until five or six months old. After they get old enough to take feed I give all the clover hay, meal, bran and oil meal they can stand up to, letting them suck the cow and feed right along. Keep a calf on this kind of feed until he is two years old and he will be a good steer. That is about all there is in it. Give meal, bran, cut hay and oil meal.

Mr. Folsom. How often do you feed?

Mr. Wilhoit. I feed three times a day when not on grass, and twice a day if on grass.

Mr. Folsom. Mr. Watson's plan was to feed often and feed regular.

Mr. Wilhoit. Regular feeding is best of course.

W. J. Quick, Columbus. This feeding oftener than twice a day, is one of the fine points urged in our papers. The point introduced by Mr. Watson is advisable to try at least. We have tried this plan of feeding four times a day and twice a day. It is considerable trouble to feed at noon, but it is not worth while to feed without putting them up. Most breeders feed three times in winter. If they are on grass they will eat four or five times a day, and then lie down. It is my opinion if cattle are fed in the winter four or five times a day, they will do better than with fewer feeds. They will do better with four feeds a day, given regular, than with three. Say feed them in the morning, then middle of forenoon, and middle of afternoon, and then again at seven or eight o'clock in the evening. If you try this I think you will find they will do better on four than three feeds.

R. H. Phillips, Rush County. Would they do better without water than feed?

Thos. Wilhoit. I water regularly. During the summer, on hot days, I put my cattle in the stable away from flies, feed and turn them out at night.

Mr. Miller. How do you give your stable proper ventilation to keep flies away?

Mr. Wilhoit. You can put screens over the doors.

B. F. Legg. What as to salt?

Mr. Wilhoit. I keep it by them all the time.

Mr. Mitchell. You remember Clarence Kirk Livingston was quite a figure at the Fat Stock Show at Chicago; that steer sucked until he was six months old, and was fed all the meat and rich feed that he could eat. It was evidenced that every steer entering the first year of calf life gave the best returns; the second and third years the cost of feed increased, and the gain in flesh was less. This steer, Kirk

Livingston, was fed sweets and the carcass was not worth anything. It was sold to the Grand Pacific Hotel, and was declared worthless, being of a blubbery composition.

Col. Gault. Mr. Wilhoit would you let the calf run with the cow?

Mr. Wilhoit. I would separate them. When the calf is very young I would let the calf suck three times a day, but after a month old twice a day is sufficient. If you let it run with the cow it will keep itself full and not eat so much. Those fine bone and flesh cattle will mature at from two to two and one-half years old if rightly fed; then let them go. There is more money in them at that time than any other. If they go until they are three years old they are lumpy, and are not so good. There is some difference in steers, as you will find a coarse steer will not mature as soon as a fine one. After passing the second year, or perhaps two and one-half years, it has been my experience that it is not profitable.

Mr. Mitchell. I was raised in Scotland, and my recollection is that we never let the calf run with the cow there, but always milk the cow and feed the calf.

Col. Gault. I have a Hollander feeding my cattle. He says when my calves come he will never let them suck the cow. I said they must, but he says in Holland they feed them.

Samuel D. Butts, of Columbus, read the following paper on

"FUTURE OF SHORTHORNS."

That the Shorthorn breed of cattle of the past and those of the present day stand high in the estimation of the public no one doubts. For more than one hundred years it has made rapid strides of progress, and its representatives are to-day to be found in almost every State and Territory of the Union. The fact that they are so largely sought after, when first-class stock is offered, at either public or private sale, shows that they are not on the wane. In grading up our native cattle their value can not be estimated. They have given us a grade of cattle that has added a vast amount of wealth to us as a nation.

If it were possible we would carry you back, in your minds, to the time when no Shorthorns had ever been landed upon our shores, and when no new blood had been infused in the veins of our native cattle; when every representative of the Bovine race was a native. We of to-day could not possibly estimate the value of such cattle. The only market for them would be at home, and they would go begging. There is no foreign demand for such cattle. Not only this, but our leading city markets demand a better class of cattle. To meet this demand the blood of the Shorthorn has been steadily infused, until to-day the United States is one of the greatest beef-producing nations of the world. Yet as a nation we are in our infancy, and we are not aware of our capabilities in the production of beef. If our national wealth has been so incalculably increased in the past by the infusion of Shorthorn blood, in the years to come who can place any estimate upon the wondrous worth of the early importers of Shorthorn cattle? And we of Indiana are in the very midst of this magnificent breed. Our cattle in early maturity stand second to none, and in great weight stand second only to Illinois.

While we have made rapid strides of progress in the early maturity and size of our cattle, there is a growing demand for larger and better cattle. When we go to our markets and see the large number of scrub cattle, and realize the fact that not one in one hundred is suitable for the export trade, or cattle that will bring the top price in any market, we can readily see the demand for thoroughbred cattle. We must remember that the taste of the consumer of beef is being all the time educated to a higher standard, and that while our native cattle once satisfied these requirements, they will not now; and better cattle, given better care and attention, must be produced. If more Shorthorn blood is infused in the veins of our common cattle, and greater care given, this demand will be met. We will then have more of that rich, delicate, juicy beef, so delicious to our palates.

The reason that Shorthorn blood should be used upon our common cattle is the fact that the Shorthorns have proven by their use that they have given the best results in the hands of the average farmer. Their docility, their hardihood, their early maturity, their large size, with first-class beef predominating, their ability to give the family plenty of milk and butter, and their power to reproduce these qualities when used upon our common cattle are attributes that will always bring them in demand by the farmers of this country.

While the Shorthorns have been of so much benefit in grading up our common cattle and creating a demand for a better quality of beef, we are led to hope, in fact know, that still greater results must be realized. It is for the breeders to say to what extent this is to be carried and what the standard attained. If we rear Shorthorns worthy the name, and improve them as we should, we need not fear the results. And if we are enthusiastic in our calling, we will enlist others in the cause. We need to see that our neighbor inspect our herd, and point out to him the good qualities of the breed. And especially let him know that our cattle are not pampered.

There is no greater educator than an object lesson. If we can by this means show our neighbor how easy it is to raise first-class cattle we have gained a point in our cause.

As breeders we are apt to think, write and talk too much on what the Shorthorns have done. We glory in their past success forgetting that the victories they have won should only be incentive to arouse us to seek still higher qualities in the "red, white and roan." Bates and Colling were not satisfied with any result they obtained, but kept continually striving for a higher ideal that they might attain greater results in their herds. If we would meet with the same success as theirs we must put the best energy of our lives to the study and attention of our herds. These men spared neither time nor expense in aggrandizing their herds, and wherever Shorthorns are reared their names are held in high esteem. While every breeder may not become a Bates, a Colling or a Cruickshank, a few may become such, and all may become more proficient.

It is an easy matter to become a breeder of cattle, but to breed to a certain line and form becomes a difficult problem—one in which many hard knots are tied. Yet if we would attain the success we hope for, and stand pre-eminently

above all other breeds of cattle in beef, early maturity, butter and milk, these knots will have to be untied, and we will be compelled to use deep thought and sledge-hammer blows.

We are glad our Hereford friends have given us so much trouble during the past few years. They have fought a gallant fight. They have been quietly plodding along, breeding to one point alone—beef. While the Shorthorn breeders have been resting on the glories of the past the Herefords have leaped alongside and now it requires a great effort to get the advance. But we know they have come alongside in one quality only—beef. The Chicago Fat Stock Show, than which there is no better authority, teaches us that the Shorthorns are still in advance in early maturity. In other words they produce more beef at an earlier age. As for milk and butter our competitors never have made any claims, and should they, they would back them up about the same as our Jersey friends their claim for beef.

But we learn this lesson from the Hereford breeders, that they have bent every nerve and brought into requisition every force that they could bring to bear upon the one object—production of beef. Shall we be less sanguine than they, or shall we go forward showing them and the world that we are not dead but have only been slumbering for a season.

Let us be more careful in the selection of our bulls to head our herds. When we obtain one that fills all the points, both in form and pedigree, breeding strong, well formed calves, let us retain him until he is no longer useful. We all know that the tendency of breeders to-day is to use young, vigorous bulls, retaining them at the head of their herd for about two years, when they are discarded and another untried one takes his place. Can we expect the most favorable results from this practice? I think not. I would rather pay a long price for a well formed bull, than to run the risk of an untried one. Few bulls reach old age. After a bull reaches the age of four or five years he rarely finds a purchaser, except to be slaughtered. Some of our breeders would head their herds with older bulls, but they think it requires better fencing and better care. Bulls are like stallions, their worth is not known until they reach old age, until their progeny is old enough to show what the sire can do. If the bull is one half of the herd it seems strange that he can be so easily discarded.

Not only this, but we use the same bull on all our cows, no matter what the form or the breeding. Is this the true art of breeding? Can we expect to obtain the best results from this practice, or improve upon the stock in our herds?

The object in breeding cattle is to make money out of it. He who is most successful is the one who realizes the greatest profit from it. Then let us cull our herds and send the culls to the shambles. They will make fine beef and will command a high price. They will be educators. The breeder will see how much better stock he can produce, and the consumer of first class beef will make a higher standard to gratify his taste. And we must not confine our culling to the bulls alone, but must beef heifers as well. It is only through severe weeding out that we may hope to obtain the best results. This will require a great deal of nerve force, but we will find this the only way to reach the pinnacle in Shorthorn breeding.

If there is one here to-day who is about to embark in the breeding of Shorthorn cattle, or in fact any other breed, be careful in the selection of bull and cows. It is as important to have the one good as the other. It is far preferable to have one animal well formed and well bred, than a dozen poor ones. It would be better to pay an extravagant price for one extra cow than to get bargains in many that are kept for breeding purposes. The net profit would be far greater, and instead of having to hunt purchasers, purchasers would seek the well-bred, well-formed ones. This seems strong language to one who is about to begin the breeding of cattle, but we are sure these older breeders will bear us up in this assertion.

The dawn of a new day is breaking upon us. We can look over the landscape and see the breeders slowly awakening from their long slumber, trying to behold what the new day is to bring them. They realize that the times have changed, some have begun the culling of their herds, and many are ready to fall in line. These culls are going to the shambles, and occasionally we see one of the very best thrown upon our beef market. The tidal wave has started and the "red, white and roan" will make rapid strides toward perfection. We in admiration will wonder why this culling was not begun long ago.

The future of the Shorthorns will be one grand triumphant march to success. They are, and will continue to be, the "red, white and roan." No color fancy will change them, but all will breed to obtain the animal that will give the best results at the block and pail; that will give us the greatest amount of the best beef at the least cash per pound. We will then breed to the higher standard of Booth and Bates, and need not fear the onward tramp of any other breed in either beauty, size or form.

We can then go about our herds with the pleasing assurance that though we have used hard, continuous labor to attain this high standard, yet by this thoroughness we have been crowned with success. We need not look forward to any time of leisure. We live in an age of lively competition, and every nerve force has to be brought into active operation to attain success in any calling. But amid long days of bitter contest the foundation of Shorthorn breeding has been carefully laid by hands devoted to their calling. It remains with us to add stones to the building. What kind shall they be?

DISCUSSION.

Isham Sedgwick, Richmond. There is one point in that paper I would if possible impress upon the minds of our breeders. I find from my experience in shorthorn breeding that I made a mistake in buying cattle. I thought to buy quite a large number of short-horns when I went into the business, when if I had bought two or three animals instead of twenty it would have been better. There is another point of which I wish to speak. That is the slaughter of young bulls at two or three years old. I would not buy one under four years old, and one who had proved what he could do. A young bull is an uncertain quantity. He does not possess the power to impress his qualities on the progeny, I don't care how nice he is bred. A few years ago I saw a nice Bates bull at a Kentucky sale, for which a gentleman paid \$700, and I don't believe a member of this Association

would take the animal home if it were given to him. That is the trouble with too many of our bulls. We want to have animals that are good getters, and then use them just as long as possible, which I think is a good idea. I am just now reminded of a remark made not long ago that, in selecting, while we may not pay as much attention to pedigree as some people do, it is a good point in selecting either cow or bull to know that the dam is a good milker as well as a beef animal.

Mr. Wilhoit. Mr. Sedgwick speaks of well-bred bulls. I differ with him on that point. Pedigree don't make a fine-bred bull. Take good animals and breed four crosses of the best individuals, and you will have fine bone and flesh and the calves will be like him, but if you take only one cross and it will be like Mr. Sedgwick said, nobody will have him, for you don't know what you are going to get. Take a certain pedigree, if it is a coarse animal, and breed in that line all the time, where are you going to get the fine animal? We must have good individuals. You had better buy three heifers that average \$1,000 each than ten for \$100 each. We have too many cattle that won't bring anything. You will notice when a sale comes off if there is a first-class animal there, you will find a buyer for it. We have got to stick to fine bone, flesh and constitution. Mark a line half-way up and take the animal that has the most high-priced meat on top. That is the kind I want.

Judge E. B. Martindale. I would rather listen than talk. I like Brother Wilhoit's idea of the animal, but would rather have the same animal with a good pedigree behind it. If I have a good pedigree behind it I feel much safer. We had that exhibited in Chicago the other day. It was a Duchess animal. We could not sell as well as that man did without a good pedigree. We could not get an Indianapolis man to go up there and put \$3,000 in a heifer without assurances that it was all right. I attended the sale of short-horns a year ago at Indianapolis, and there were some there of the hardest quality. The short-horn of this country has been degenerating and the Hereford is coming up. We should take the best cow and breed up or the Hereford will get ahead of us. Mr. Wilhoit should keep his Bates and keep right with the pedigree.

Mr. Folsom. The Judge refers to the Oakdale herd sold at Chicago. The reason that herd sold at such fabulous prices was because they had been bred in line.

J. B. Conner, Indiana Farmer. We should not get away from the chief points of this paper, and that is the disposition made of the numerous bulls. Of all the reforms, Shorthorns are truly a reform, and the only cattle as the reader of that paper would imply. There are a vast number of scrub cattle in this country, and a vast number of owners of that kind of cattle, but it would be better for the beginner to produce better grades than common cattle. It is better to breed to a \$50 or \$75 Shorthorn bull, than to continue his present process of breeding. If the scrub Shorthorn bulls were put in the place of the common scrub bulls it would greatly improve the common cattle of the country. A paper read not a year ago gave an estimate on this subject, showing there was enough bulls if all were used, and none sent to the shambles to fill this need. Now we must remember, coming back to our capabilities of judging, what is the best bull in this Shorthorn breed. We are not perfection in judging the value of animals, and there are men who

would invest in a bull costing no more than \$75 or \$100, who can not be induced to get a bull that would cost more, and it is better to do this than not to breed to a Shorthorn at all. The field is wide and open. It is better to use a steel plow than a cast iron plow, and a cast iron plow is better than a wooden one. A threshing machine is better than a flail for getting out grain. We don't come to perfection until many steps are taken. So you see much might be said on both sides of the question.

R. H. Phillips. I would like to ask Mr. Butts how long he would continue to use the same bull on his herd.

S. D. Butts, Columbus. I would use a bull, if a good breeder, such as already described, one that produces well-formed calves, as long as I have anything to breed him too. I would not hesitate to make one cross on his own calf, yet it is a little risky, but not so much as a second cross; when you obtain the first cross you are liable and almost certain to stamp on the offspring the good qualities of the bull, provided the cow has as good qualities as the bull. It would do as Mr. Wilhoit has said, to take a fine-bone bull and breed on a rough cow, making another cross and expecting a fine-bone calf, you may get it and you may not. On the second generation I have not been so successful as on the first; it is not the form, but the weakness of the calf when dropped. My experience is if I am not there to take care of the calf it dies. This I think is on account of this manner of breeding. In beginning to breed Shorthorn cattle and having to take a young bull I would want to see the sire and dam. I would want the bull to partake of the qualities of both sire and dam, if it don't take of this you can not perpetuate them. If the dam is rough and sire fine, the offspring may be good, yet the offspring of that calf may be inferior. If I were buying a young bull I would use it only on individual cows until I knew what would be in the offspring. If he did not give satisfaction, I would sell him the first chance.

DISCUSSION ON THE \$250 PRIZE OFFERED BY THE NATIONAL SHORTHORN ASSOCIATION FOR A CONTEST OF THE MILK AND BUTTER QUALITIES OF THE SHORTHORN.

J. Strange. I understand the value of the milking qualities of the Shorthorn is considered as depreciating, and the object of this \$250 prize offered by the National Association, is to start up and encourage the milking qualities of the Shorthorn and make it profitable to those engaged in the enterprise, and after while we can get milkers that will compare favorably with other dairy breeds. It is intended to make a special class, and the Agricultural Board pay a prize inside of other dairy breeds. I understand this is an additional class prize which they offer if they are admitted to compete in sweepstakes against other breeds, but if they are not admitted in sweepstakes it deprives them of getting the prize.

Judge Martindale. The money is appropriated to the State Board of Agriculture to be paid in premiums on a Shorthorn class for milk and butter, and will be paid if Shorthorns are permitted to contest for sweepstakes.

E. S. Folsom. I understand if the State Board of Agriculture is willing for the Shorthorns to enter the contest as a milk and butter breed the National Association will give this prize of \$250 in their class. The State Board has a class of Jersey, Holsteins and other dairy breeds.

Mr. Mitchell. There should be a contest of the milking qualities of the Shorthorns, but we have no class.

E. S. Frazee. That \$250 prize offered by the National Shorthorn Association is for the benefit of the Shorthorn men if they compete with each other, provided they are allowed afterward to compete for sweepstakes with other dairy breeds.

Judge Martindale. That appropriation is to the State Board of Agriculture to be given as premiums to Shorthorns for their milk and butter qualities if allowed to compete with other herds.

Adjourned to 9 A. M.

SECOND DAY.

JANUARY 25, 1889.

The Association convened on call of President Mitchell.

The President suggested that the time of holding the Shorthorn meeting in the future be designated on Wednesday of this week at 1 o'clock instead of Thursday, as this year, and, on motion of Mr. Miller, the Association agreed that when it adjourned it would adjourn to meet at that time next year.

Mr. J. M. Sankey, of Terre Haute, offered a resolution asking the appointment of a committee to draft a bill to be presented to the Legislature prohibiting the importation of dressed meat into the State, which was adopted; and Judge J. S. Buckles, E. S. Frazee and H. C. G. Balls were appointed a special committee with instructions to secure, if possible, the passage of such a bill.

R. H. Phillips, of Arlington, Rush County, submitted the following:

"POINTS OF A GOOD SHORTHORN."

We want the animal that will make the most of the desired product to the amount it consumes. We must have a fine bone, fleshy animal, with a good constitution, described as follows:

Head—Clean and fine.

Eyes—Mild and medium size.

Ears—Medium size and thin.

Horns—Neat and a little drooped down.

Neck—Clean and tapering.

Breast—Full and wide.

Brisket—Well drawn and forward.

Shoulders—Smooth.

Crops—Well filled and meaty.

Heart girth—Full and large, so as to give good constitution.

Ribs—Fleshy and broadly sprung.

Loins—Broad, level and smooth.

Hips—Broad, level and well covered.

Rump—Level, long and broad.

Tail—Tapering and fine.

Upper loins—Level and straight.

Quarters—Heavy and well rounded.

Thighs and twist—Full and well down.

Udder—Large in proportion to age and well proportioned.

Teats—Good size and nearly equally distant from each other.

Testicles—Even in size.

Flank—Full and well down.

Lower line—Nearly straight.

Legs—Neat, tapering from the body to the knee.

Feet—Medium size.

Handling—Mellow.

Skin—Fine, elastic, loose, medium thickness.

Hair—Thick and glossy.

Symmetry—Smooth, good style, well proportioned and attractive in appearance.

Weights—Age, 12 months, bulls 1,000 pounds, cows 800 pounds. Age, 24 months, bulls 1,300 pounds, cows 1,100 pounds. Age, 36 months, bulls 1,600 pounds, cows 1,400 pounds.

Color—Red, white and roans.

Pedigree—That will record in the American Shorthorn Herd Book. Bulls must have a masculine appearance.

DISCUSSION.

J. W. Harper. What do you mean by the upper and lower line?

R. H. Phillips. The line I would use from the belly up.

G. W. Thomas. What do you consider a mellow handler?

R. H. Phillips. I can tell better by feeling than I can explain to you here. There is one kind that is soft and will leave a print when you press on it. I want one that don't leave any impression when you take your hand off.

Mr. Miller. What point above all other points would you lay most credit on, the most prominent and one you value the highest?

R. H. Phillips. Constitution around the heart.

Mr. Miller. What is the difference between the girth and heart in measurement?

Mr. Phillips. I do not know as I can answer that question accurately; there is not much difference in measurement.

W. R. Zike. There should be more discussion on this question. There are a number of old breeders here who are posted in the business, who could give us

much valuable information. While Mr. Phillips has given us many points of excellence of the Shorthorn, he failed in one particular; they should be low down to the ground, and legs should taper well from the body down.

W. F. Christian. I am like Mr. Zike. I think such men as Mr. Swain and Mr. Wilhoit should get up and tell us something on this subject. Many of us are just going into the business and are investing considerable money and we desire to learn all we can on the subject.

G. W. Thomas, Homer. Mr. Christian's idea is good, as young breeders have come here to learn what you older breeders know. That is why we have such an attendance of young breeders here, and unless the older breeders impart their knowledge obtained by years of experience, they go away without learning what they should. I think these older breeders should take part in this discussion. Mr. Swain and Mr. Wilhoit have had years of experience, and we want to know what they have done themselves. Of course we go to the fair, but we can not know by just attending the fair how these men have attained to the standard they have. I do feel that it would be more benefit to hear these older men give their experience than any thing coming before this convention. As to the handling qualities there is a difference of opinion among breeders as to the feeling of beef animals. There is a difference between breeders and butchers. I have attended some of the fat stock shows to educate myself on that point. We want a mellow handler; it is the understanding of young breeders that it is soft, but that is one we can not sell. I sold one of that kind some years ago that the fat was so heavy and flabby that it fell on the floor and we had to take it off before we could sell the meat. We do not want this kind of cattle, but we want to establish an animal whose handling qualities are of an elastic nature and neither hard nor soft, but medium. You are aware that those animals which took the premiums at the fat stock show, did not take premiums when they came to the block. They were of a soft, spongy nature and did not cool out right. As Brother Phillips has well said, it is difficult to explain, but to explain it in a few words, it is a feeling between hard and soft. There has been a great improvement in show cattle in that respect. I have observed a discussion in the Breeders' Gazette on the fat stock show, and I fully concur with that paper in reference to the change of judges as they suggest, they should have breeders as well as butchers, and two awards from a breeder's standpoint and one from a butcher's standpoint.

Mr. Wilhoit. I do not know that I can describe this handling quality. There is one kind that is soft and sinky and will leave a depression when you take your hand off, this is not the kind we want, but we want a kind that will give and spring back like India rubber. As far as the paper is concerned, I like it. If we buy the kind of cattle described there, and breed from them for five years, we would not have many surplus bulls over the country. I have been in the business for 40 years and I have learned that a good individual will always bring a good price. I think that Indiana has to-day more high-bred show animals than any other State. Which State took the prize at our State Fair? Indiana. Which took the prize at the Illinois fair? Indiana. Which took the prize at St. Louis, the largest fair in the world? (A voice, "except the Indiana fair.") Indiana. Indiana has taken more prizes at these three fairs than any State in the Union. We have

made more improvement in the shorthorn in the last few years than we did formerly in ten. What does this surplus mean? We made it ourselves; we have got that class of cattle instead of putting up a few good ones, we have a great lot on hands and can't sell them for only about \$40, \$50 or possibly \$60. You go to the second and third volumes of the Herd Book, you see cuts taken from Kentucky; they had fine cattle but you don't see any cuts now from Kentucky, they have to come to Indiana to get them. Indiana has as good cattle as you can find anywhere. Now what are we going to do? Are we going to go for pedigree or individual? We have been fighting against our own interest. Talk about color, red, white and roan is the color and we have to stay with it. If we take a cross and get a good individual, fine bone and good constitution, to lay on fat we have got to feed. Talk about the Herefords coming up; if we don't fight them they will come up, but we don't have to let them come up. The secret is, good individuals, then feed well.

Col. Gault, Lafayette. A few thoughts occurred to me last night after our meeting adjourned, and I noted them down, and there has been more remarks made here confirming the idea. Mr. Wilhoit has been with us in this convention, and on nearly every question of interest of the Shorthorn, he has been called on. He is considered one of the most successful breeders in the State, and has taken more premiums with his herd than any other person. He don't have to hold public sales to dispose of his cattle. What is the secret? He handles them well, feeds good, and gets good individuals. My experience for twenty-six years in breeding and handling all kinds of stock at public sales has taught me that certain features in many cases sell the animal. I am here reminded of a little boy, and sometimes many hints that have a bearing may escape "out of the mouths of babes and sucklings." At a show a party glided into the ring where the horses were on exhibition, in looking at them they said "they did not like them, there was too much hair on their legs," the little boy slipped up and said, "by gosh the hair sells them." [Laughter.] Now we are all agreed as to the point, but it is in the development of this point. When my Herefords come up they lay down and give a happy groan, and when you handle them they feel just right." Seeing is believing, but feeling is the naked truth." When I give you an apple I say "it is sweet," you say "how sweet." I say, "well, just taste it yourself." When we go to breeding stock we are apt to look to the fancy business, I would go and get a cheaper animal with good individual merit. "A thing of beauty is a joy forever." What breeder is there in his daily visits to his Shorthorns, but what has been made happy, his constant and tender care and great development, the pride of his farm, and witness of his handiwork and increase of his pocket book. A man who breeds Shorthorn cattle, it makes him a better man, a better husband and head of a family. Many people want to get too much farm, they want all the land adjoining them, and they want a few Shorthorns. They get too many, and don't feed them well. "A small farm well tilled, and a small herd well filled," there is where the profit comes in. There are men in this audience to whom I have been called and requested to sell stock, that I am sorry to say was not fat.

E. S. Folsom, from the committee on Secretary and Treasurer's reports, submitted the following, which was adopted:

MR. PRESIDENT—We find on examination since last report these accounts correct. Your committee would further report that on examination of accounts of former years we find the following items of moneys received: May 1, 1887, Wm. Kingsley, Ad., \$5; June 23, Indiana Farmer Co., \$25; July 22, W. E. Bean, \$25.

Your committee would further report that on examination of the Directory in which the above advertisements were published we find one page appropriated in said Directory by Walter J. Quick, for which we find no credit in either former or current accounts. Your committee sees no reason why this Association should not have credit for said space at the same rate charged other advertisers, viz: \$25, unless by some agreement, to your committee unknown, this space was to be donated. In reference to the Directories now on hand, your committee would recommend that the Secretary keep on hand fifty copies each of the bound and paper covered, and the balance be distributed equally among the members present.

Secretary Quick explained that the committee appointed to make terms with him at the time the Association decided to publish a Shorthorn Directory, agreed that the compensation for compiling and getting out the Directory should be \$300 and the privilege of employing one of the pages of the book for an advertisement of his own, said advertisement, however, not to be of Shorthorn cattle.

J. B. Conner, from the Committee on Registry, made the following report, which was concurred in:

The committee to whom was referred the subject of a new form of Diagram Pedigree as presented by Isham Sedgwick, report that it is most admirably adapted for herd and sale catalogues. It will afford a very full and complete pedigree in a greatly condensed form, which will reduce the cost of such catalogues very considerably. In regard to its availability for use in condensing and republication of the Herd Book, and the yearly continuation of pedigrees thereafter, your committee ask further time to consider to make full report thereon at the next annual meeting of the Association.

Mr. W. M. Chaille, from the committee to draft resolutions on the death of Charles Miller, submitted the following, which was concurred in and adopted:

Mr. Chas. Miller, of the firm of Chas. Miller & Son, Greensburg, Indiana, died March 15, 1888. He was one of the earliest breeders of Decatur County and was a man of sterling integrity, and was most popular where best known. Mr. Miller had been a breeder of thoroughbred Shorthorns since 1874, covering a period of about fourteen years. He had been an admirer of fine cattle for many years prior to his first purchase and entering into the thoroughbred business, and had been a breeder of good cattle for 30 or 35 years. Mr. Miller was 74 years old at the time of his death, and in his death the breeders have lost a worthy brother and a strong advocate of this interest.

In this brief notice we take pleasure in spreading on our minutes our appreciation of this worthy brother's efforts as a successful breeder and man of integrity, and express to his family and friends our sympathy in their loss.

Geo. W. Thomas, of Homer, read the following paper on

"MOST ECONOMICAL MANNER OF REARING SHORTHORNS."

Mr. President, and Gentlemen of the Indiana Shorthorn Breeders' Association:

I have been assigned the above subject as a foundation for an essay for this occasion, and must confess my inability to treat on such an important matter as it deserves, but will endeavor to bring out a few thoughts that may be of interest to some of us at least.

While it may seem to be going back of my subject, I deem it but proper to speak of the selection of a foundation as the first step in the economical rearing of a herd of Shorthorns. First you must select what the people want in order that you can sell at good prices, good pedigrees, good individual merit. The next thing to be considered is the kind of type best adapted to the utilizing of the feed which in my judgment is an animal of the short-legged, blocky kind, one that shows by the large girth of heart that it has good constitution, and consequently strong digestive organs. With Shorthorns of this sort we are ready to begin to economize in the way of feed. The first and most essential thing is plenty of good nutritious grass, of which I think blue grass is far in the lead, when you consider the amount of grass and length of time you can graze it together, but in our latitude we of course have to take into consideration winter feeding, and here is where our profits are lessened on account of our long winters, but by using the proper care and judgment this expense may be greatly reduced. There are many advantages that those have who have plenty of barn room, where cattle are kept fastened in their stalls during nights and in bad weather, which adds largely to their comfort as well as their growth and gain in flesh besides, the manure is saved and spread on the poorer land which amply pays for all extra trouble and time of stabling. There is room for a division of opinions as to the most economical feed and manner of feeding. I can not speak either from experience or observation as to the feeding of ensilage, but from the following extract from a recent address delivered by the Hon. Hiram Smith, of Wisconsin, on this subject I am of the opinion that this is the most economical winter feed available in this latitude. His remarks are as follows:

"Ensilage and bran are as good for cows as is clover hay and oats; coarse fodder alone is not fit for any animal; buy bran to feed with the silage; this will increase the milk flow and make a greater bank of fertility to return to the soil, more milk to make pork, to buy bran, more fertility to produce crops, more fodder for cows, necessitating more cows to eat it, more help to care for the cows, more butter to sell, and in the end plenty of money to pay all expenses and a handsome sum left as a net profit from carrying forward a sensible combination of business principles. Winter dairying is much more profitable than summer dairying, when one has the silo and a wise combination of business principles. Mr. Smith keeps 100 cows on 200 acres of land, and is receiving large profits on his investments. The Silo enables him to do this; without it he could not accomplish as

much. The silo will enable every intelligent farmer to largely increase his receipts without adding to his capital invested in land. To briefly summarize Mr. Smith's ideas, the silo, the dairy, and proper management will increase the fertility of the farm and enrich the farmer."

Which applies as well in the economical rearing of Shorthorns.

Where a person does not wish to incur the expense of a silo I find that by saving top fodder and storing it away in the barn before it gets bleached, then run it through the cutting machine with some mill feed over it, makes a very cheap feed for my cattle; my opinion is that when corn can be had at present prices, by grinding husk, cob and corn together and feeding along with the cut fodder, will make a cheaper ration than any other, when we consider that the fodder would go to waste if not fed in this way, besides by the use of the fodder you can have more meadow or pasture and can raise more stock which in turn will yield a greater profit to the farmer. By observing the above along with a course of judicious breeding you will have my views in part of the "Most Economical Manner of Rearing Shorthorns."

DISCUSSION.

E. F. Owens, New Harmony. Year before last I cut all my fodder and I found it involved much labor and wear and tear on the machine. I then proposed to use sorghum, as my friend uses in Kansas. I did not know how to save it. I sowed three acres and put it in with a wheat drill, sowing three pecks to the acre. It came up nicely, rich stalks, some of them were large enough to go through the cane mill, and were full of juice. I cut it with a mower after it had headed out about two weeks. If it is cut before then you can get two crops; I find it is good feed. I left it on the ground a week to cure but took it up before it rained and shocked it; the weather seemed threatening at that time; I did not know whether it would rain or not. I had 200 shocks on three acres. It rained the next day and for five days in succession and I thought my sorghum was ruined, but when I opened it up, I found it wet only two inches down. The outside was damaged a little, but not amounting to anything. I saw it was necessary then to leave it out, so I doubled the shocks and left it out until October, about ten weeks. I am well pleased with it. It gives me something to cut and don't dull the machine. It may be handled with a fork and makes fine feed, which the cattle like.

W. S. Robins, G. W. Thomas and L. M. Morrison, were appointed a committee to confer regarding the milk and butter test for the prize of \$250 offered by the National Shorthorn Herd Book Association.

W. R. Zike, Morristown. I planted sorghum with an ordinary drill, which came up nicely and developed well, cutting it when the seed was in dough state. When I cut it I had a man gather as much as he could in his arm and then I would cut it off with a scythe; by this method we could cut quite rapidly, letting it lay three or four days and then shock like corn; it is fine feed and most economical. I run it through the cutter and feed with crushed corn. It is bright and nice and will stand in the field until the middle of winter.

Col. Gault. The corn thresher is going to furnish the coming feed. There is no waste about it. You can have it threshed either with the corn on or off, just as you like. If you would thresh this sorghum I doubt not but it would be better.

Mr. Dyer. Mr. Zike, what is your mode of cultivating sorghum?

Mr. Zike. I cultivate just like other corn and never had a crop to grow better and with as little bother. I plant a little later than corn.

T. A. Cotton, Manilla. I have a question on my mind which I wish to ask this assembly of cattle breeders. We are called together here as breeders of Shorthorns. That being the case, the presumption is a large majority of the gentlemen before me are engaged in the Shorthorn industry. Why are they thus engaged? Is it because Shorthorns are the best cattle on the earth? If that is the case what is the matter? What is wrong with the cattle? What is wrong with the breeders? Other families of cattle are making rapid strides to the front because we breeders of Shorthorns are not doing our duty; the fault is with us. I would like to know what is the remedy.

I first engaged in the Shorthorn business in Shelby county in 1874. I went to Gen. Sol. Meredith, and he said to me: "Young man, I would like for you to spend a week with me in Kentucky." We went and spent a week buying three heifers, and good ones too. Several of you breeders know that I have one good show animal, a young Mary. In my manner of handling and breeding cattle I have demonstrated that the Shorthorn cattle are the best in the world. We have the general purpose cattle, that will bring more money than any cattle in the world. We should go to work and feed to bring out all the properties of the Shorthorn, and advertise; that will cause a boom, because our people are made up of a disposition to grasp anything that is new. My admonition to you in the State of Indiana and throughout the land, is to feed up and bring out all the fine points of the Shorthorn and it will tell what is in them. I would like to hear from other gentlemen regarding this matter.

GOVERNOR'S REMARKS.

Gov. A. P. Hovey on being invited to address the convention, spoke as follows:

Mr. Chairman and Gentlemen:

I am glad to greet you this morning, because I take an interest in the cause you represent. Every man who takes an interest in this adds to the benefit of mankind and meets with the approbation of the State. I know but little about the subject which occupies your minds, and I am sure every man in the house knows more about the Shorthorn breed of cattle than I do. I am satisfied that the improved breed of stock—horses, cattle, sheep and swine—adds much to the benefit of our State. It is just as easy to raise a well-bred cow or horse as it is to raise a scrub, hence good stock is of very great importance to the people. One thing I will be glad to do is to recommend that the General Assembly pass a law as far as possible to prevent the introduction of contagious diseases into the State. I believe that the United States, with her great resources and great facilities for raising stock, could feed almost the civilized world. I thank you, gentlemen, for your kind attention.

G. W. Thomas, from the Committee on Milk and Butter Test for the \$250 prize, submitted the following report, which was adopted:

We, the Shorthorn breeders of Indiana, ask for a dairy class for Shorthorn cows at our next State Fair, the premium to be divided as in other dairy classes, and that they may be judged by the same method employed in judging other dairy breeds. This to be paid by the National Shorthorn Breeders' Association.

Officers for the ensuing year were elected as follows:

President—Judge J. S. Buckles, Muncie.

Vice President—E. S. Folsom, Indianapolis.

Secretary—H. C. G. Bals, Indianapolis.

Treasurer—Hon. E. S. Frazee, Orange.

Mr. J. S. Buckles, from the Committee on Legislation, reported the following, which was adopted:

Resolved, That we earnestly request the General Assembly of Indiana, now in session, to pass an effective and comprehensive live stock sanitary commission bill at its present session, and that House Bill No. 12 embraces most of the provisions essential to the effectiveness of such a bill.

Resolved, That we would very much prefer that said bill should be so amended as to make the commission appointable upon the recommendation of the State Board of Agriculture; but, whether that is done or not, we request that the bill be passed, so that we may have some means of protecting the live stock interests of the State.

Pending its adoption Mr. Buckles said: "We desire that the appointment be made upon the recommendation of the State Board of Agriculture to keep it out of politics. We want a man who has no interest in politics. But it is not our business to dictate to the Legislature, but leave the matter with them to act upon as they may think proper. There is another matter I would like to see changed. In the original bill swine could not be included in the Sanitary Commission. I explained that yesterday. I want all kinds of stock to come under one commission, but we have no way of putting this in. The swine breeders will be in session this afternoon, and they will determine whether they want to be included or not. I am not in favor of putting them in over their protest, but I hope they will see that they should be included. The importance of having a bill passed of this kind is, we have not to-day a word in the statutes of Indiana authorizing anybody to protect us against diseased animals coming into the State. We are utterly powerless in this respect at the present time. If we had this bill passed, notwithstanding we may not be able to manage it, yet it puts us in the power of asking the Governor to put a stop to the importation of diseased stock into Indiana. Hence the importance to stock breeders of every description of stock to have a bill of this kind passed."

Retiring President Mitchell called Judge Buckles, the newly elected presiding officer, to the chair, who addressed the convention as follows:

"I hardly think I am justified in doing more than to tender my sincere thanks for the manifestation of confidence you have imposed upon me. It requires care, attention and labor to carry on this work successfully, and all I can say is that I

will promise to do the best I know how. It would not be possible for your presiding officer, without help from you, to keep up this association in the prosperous condition it now is. I have heard that we are not doing our duty; those who have been in the habit of attending the Shorthorn Breeders' Association know that there has been a radical change in the last few years. What I want to say to you on this subject is not to allow this change to go backward, but forward, until the Shorthorns of Indiana stand ahead of all breeds of cattle, and stand there because it is right that it should. Let us convince our fellow-citizens that it is true. Us, who are old, can not do much, our day of usefulness is comparatively speaking passed, but still we can stand by and hallo, when our younger breeders pass along, then let us go forward with a determination that it shall be a success."

The Committee on Programme made the following report, which was adopted:

PROGRAMME FOR 1890.

"Why Farmers Should not Use Grade Bulls," Lewis Moore, Muncie.

"Science of Breeding," H. C. G. Bals.

"Care of Bulls from Birth to Time of Selling," W. D. Heagy, Columbus.

"Why Breed Shorthorns?" Hon. Robert Mitchell.

"Why will it Pay to Give Shorthorns Good Care?" E. F. Owens.

"Most Economical Manner of Feeding Shorthorns," W. C. Clapham.

"Selection," Judge E. B. Martindale.

Robert Mitchell. The papers contained a few days ago information that five horses had to be killed at Peru on account of a contagious disease called glanders. I do not know whether the report is true or not, but if it is, it is enough to cause alarm. In Illinois a man gets pay for his stock when they are killed for the public good of the citizens. In Indiana we don't get anything. The public welfare of the citizens of Indiana should be put on the same footing as other States. As it is we are made the dumping ground for all kind of diseases, and can have no redress for stock killed for the public good.

E. S. Folsom. I move that the Shorthorn department of the Indiana Farmer be continued for twelve months longer, *provided*, The Farmer sustains that department without incurring any expense to this association.

J. B. Conner, of Indiana Farmer. The Shorthorn department of the Farmer, so far as advocating the Shorthorn interest of the association, has never cost the association anything. The Farmer has such a relation to the Shorthorn interest in Indiana that it would maintain that department without any expense to the association. It never has been any expense heretofore.

The motion carried.

On motion of Judge Martindale, the secretary was instructed to open an office in Indianapolis, where the herd books, live-stock papers and other documents of interest to Shorthorn breeders could be kept for the use of breeders.

E. S. Folsom. The motion just carried is a good one, and from which, if carried into effect, we might be benefited. The Indiana Farmer Company, as the organ of this association, exchanges with the leading live-stock papers of the country. These Indiana Farmer exchanges, after they are through with them, might

be passed over to our secretary and placed on file, and it seems to me we can get exchanges in that way without putting on the list. I understand, Mr. Conner, that you get the Breeders' Gazette and other leading stock journals?

Mr. Conner. Yes.

W. S. Goodwin, Breeders' Gazette. We would take pleasure in sending a copy of the Breeders' Gazette direct to the office.

Mr. Mitchell. To make our office still more interesting, I move that a committee consisting of the Secretary, Messrs. Conner and Christian, be authorized to look after this and see if the State Legislature will allow the Herd Books taken from the State Library and placed in our Secretary's office, and allow the public to have access to them, as in the State Library. I think this committee should make an effort to take the Herd Books from the State Library and put them in the office of the Secretary for that purpose.

E. S. Folsom. This Sanitary Commission Bill is one we should consider. It will be in the hands of the Legislature and not the Governor. This association should appoint a committee and endeavor to get a member of this association on that commission. We want to be represented if the bill is passed, and I see no other way to get a man from our association on without working to that point.

Mr. Mitchell. If all the different associations made such a demand, there would be no stopping place.

E. S. Folsom. There is no harm in asking, even if we don't get it.

On motion the Resolutions regarding the Sanitary Commission were ordered printed and scattered among the members of the Legislature.

Adjourned *sine die*.

JERSEY BREEDERS.

The seventh annual meeting of the Indiana Jersey Breeders' Association was called to order by President D. H. Jenkins, in the lecture room of the Indiana State Board of Agriculture, at 1:30 P. M., January 22, 1889,

The records of the association having been mislaid, the reading of the minutes of the last annual meeting were dispensed with.

Wm. C. Smock, secretary *pro tem.*, read his report, as follows :

SECRETARY'S REPORT.

To the Members of the Indiana Jersey Breeders' Association :

On October 30, 1888, Thomas A. Lloyd, who had been the secretary of this organization since its inception, died. In December, 1888, the undersigned was appointed secretary *pro tem.* by the executive committee. The records of the organization have not come into my possession, and for the want of them I have been somewhat embarrassed in conducting the correspondence with the members of the association with reference to this meeting. From the President of the association I obtained a list of the subscribers to the Jersey Bulletin, and have mailed to each of them notices of this meeting, and have caused similar notices to be published in the Jersey Bulletin. I have conducted such other correspondence as seemed necessary in the preparation for the annual meeting of the association. I have received from the widow of the former secretary and treasurer \$28, and have expended \$1 for postage.

WM. C. SMOCK,
Secretary pro tem.

President Jenkins delivered his annual address, as follows :

PRESIDENT'S ADDRESS.

It is customary, and perhaps in this case unfortunate, in bodies of this kind for the president to deliver an address at the opening of the annual meeting. There are two good reasons why I should be excused from such a task. The first is that for three months past I have been unable, on account of ill health, to perform even my usual amount of work on the Jersey Bulletin ; the other reason is, I

could not make a speech or deliver an address if I tried ever so hard. No one ever thinks of calling on me for anything of the sort; yet, as President of such an important organization as the Indiana Jersey Breeders Association, I feel it to be my duty, if nothing else, to simply recall a few of the more important occurrences in the Jersey world during the past year.

That "all Jersey breeders are dairymen but all dairymen are not Jersey breeders" will apply to the business we represent, but it would not have "fit" quite so well a few years ago, when so many were breeding Jersey cattle for mere speculation. Now Jersey breeders and dairymen are very closely allied in the common interests which they represent; for in the best dairies, where the best butter is made, do we not find that Jersey blood is largely employed? I do not mean where the *most* butter is made, but have reference rather to quality than to quantity. One of the things most needed to-day to assist in making this breed the universal butter cow is a separate market report of Jersey butter in the daily bulletins of Chicago, New York and other principal butter markets. We have now market reports under the headings of "creamery" and "dairy," either of which might mean anything that looks like butter. Let us have a report headed "Jersey" butter, which would mean something.

PROGRESS OF THE JERSEY IN 1888.

I never could quite "catch" the close connection between a fat stock show and a dairy show; oleomargarine manufacturers did, because their butter(?) is made of that kind of material. It always seemed to me like tacking a piece of cloth onto a garment of different hue, until this year, when the Michigan Agricultural Experiment Station people went to Chicago with two fat Jersey steers, the result of which you all know. The meat of the Jersey was pronounced by competent judges, *i. e.*, J. Irving Pierce, proprietor of the Sherman House, Chicago, and his patrons, to be the best meat they ever ate. I understand the Sherman House bought of all the premium meats. In the list of carcasses from the Michigan Experiment Station, composed of all the beef breeds, that of the Jersey stood fourth, and ahead of the Shorthorn and the Holstein; the latter last on the list, and was characterized as "of a bluish tint" or milky. The Holstein is the leading "general-purpose cow." J. McLain Smith once said he saw "no reason why the best dairy cow in the world should not produce a steer calf which should win champion honors at the fat stock show." Now, the fact is, Mr. Smith was right. The same happened at Chicago. A Jersey steer took first place over both Shorthorns and Holsteins for the finest quality of beef. This Jersey steer's dam came from the tribe of the best dairy cows in the world. So much for Jersey beef. But do not breed Jerseys for beef, for if you do you will certainly get "left." The idea is only to show what can be done with the worthless bull calves and cows and heifers of this breed not suitable for dairy work.

As the Jersey Bulletin has already shown, ninety-two cows of this breed passed the fourteen-pound mark last year, twelve of them making twenty pounds and over of butter in seven days, and eighty ranging from fourteen to twenty pounds per

week. The highest weekly test reported for the year was made by Alpheon's Belle—thirty-three pounds, eight ounces. Have any of you seen reports of like records from any other breed?

Concerning high tests and high feeding, I have only this to say: I am in favor of high tests (forced tests), but not to the injury of the cow or race. Seven-day tests are good guides as to what a cow will do; thirty days are better, and the yearly tests tell exactly the capacity of any cow. Feed well, feed high if you will, always keeping this side of the danger line. Train your cows to give all the rich milk and make all the butter they are capable of by feeding rich food in proper proportions, which is easily determined by any practical farmer or dairyman. The Jersey cow is a worker and she can be pushed to her full capacity without injury, and be made to yield the maximum amount of good butter, or she can be left to plod along and barely make her expenses.

Concerning high tests of Jersey cows, Mr. D. F. Appleton says: "The object certainly is not solely to ascertain the value as a butter maker in any particular cow that is being tested, but to ascertain her value as likely to impart to her progeny a tendency for producing large quantities of butter."

One thing is certain, on the farms where we find high tests, so-called, there we find sleek, well-kept cows, and all else to correspond. No fourteen-pound and upward cows of any breed are found on farms where the fences are down, gates off the hinges, and pigs rooting up the grass on the lawn. These kind of fellows do not force anything.

The highest price paid for any Jersey at public auction last year was \$705 for a heifer calf sold at the Tennessee sales. In this same sale, four heifer calves sold for \$1,790, making an average of \$447.50 each. At the Kellogg, May sales, held in New York City, sixteen heifers, contributed by one firm of Jersey breeders, averaged \$146. The Messrs. Cromwell bought twenty-one head of milch cows for dairy work, paying an average \$282 each. The breeders' cup was won by Mr. T. S. Cooper on five animals bred by himself, with an average of \$427, Mr. Farlee competing with an average of \$300, followed by Mr. Reburn, of Ontario, with \$283. In 1887 an average of \$282 won the breeders' cup.

At this same sale last year—

2 cows sold for \$600 and over.

2 cows sold for from \$500 to \$600.

5 cows sold for from \$400 to \$500.

11 cows sold for from \$300 to \$400.

26 cows sold for from \$200 to \$300.

Probably the most important event of the past year in the Jersey world, outside of the great and growing demand for Jersey stock, evidenced by the list of transfers each week and the sales reported, was the public test of fourteen cows at the fair in Tennessee, by a committee appointed by the president. This test, which is fresh in your minds, is the best record ever made by any cow, or cows, of any breed, and if it needed it would put the Jersey breed at the top of the list as great butter producers, not only for amount of butter and its quality, but for richness of milk.

A leading Holstein breeder, perhaps I might say *the* leading Holstein breeder of America, is credited with saying: "This breed [the Holstein] has more cows that have records of over one hundred pounds of butter in thirty days than all other breeds put together. It has more cows with records of twenty pounds a week than all others." Now, if this is so, I have never heard of it; I have never heard of this claim being made before. These records of over one hundred pounds of butter in thirty days, according to the statement of the firm of which this gentleman is a member, number just seven cows, and are average records, not actual, and the list of twenty pound cows of this breed has never been published, to my knowledge.

Now, let us see what the fawn and white cow has to her credit in this line. In a hurried examination of the lists of tests as published in the Jersey Bulletin, I find forty-six cows have seven-day tests which average over one hundred pounds of butter in thirty days; one hundred and fifty cows with weekly tests of twenty pounds and over. I did not have time to hunt up the actual thirty-day and yearly tests. This gentleman will have to guess again.

Dr. W. B. Voyles, of Crandell, Ind., read the following paper on

THE THOROUGHbred SYSTEM OF JERSEY BREEDING.

The most important item to a new beginner in the breeding of thoroughbred Jerseys is to begin right, and then adhere steadfastly to the plan of the beginning.

We often read in the Bulletin the publicly announced beginning of some one who seems to regard his outset as something unusually good. He has "just purchased, at a long price, the Son of Skyrocket, dam Sunbeam; the dam and sire's dam have an average record of 75 pounds per week. Who can beat it?"

Possibly Mr. Quiet is in pursuit of a better beginning, with a son of Wintercloud, dam Frostbite; dam and sire's dam both untested, but whose combined ancestry from the second to the seventh generation is far superior to the remote ancestry of the son of Skyrocket and Sunbeam.

The manner of beginning with breeding animals close up in pedigree to great performers is correct, provided that the great performers are themselves buck up in pedigree by an unbroken line of illustrious butter producers. Otherwise they may be only phenomenal, sportive and accidental, and incapable of reproducing their excellence in their offspring. On the contrary, the beginning with animals of good parts and promise, with untested sire and dam, is not necessarily bad, particularly if from the second to seventh degree in the line of their ancestry, their pedigrees are full of the best butter blood of the breed.

The watchword of professional breeding is that "like produces like," or the "likeness of some ancestor," which transposed means that "like produces like," *except when it don't*. When like don't produce like it generally produces something not entirely at variance with its kind, and will, therefore, resemble some more remote ancestor. The likes are expected to resemble one or both of their immediate ancestors; the "dont's" are expected to find their analogue in some ancestor within the seventh degree in generation. It was upon this theory that a standard in

breeding was once formed, that seven crossed in a well directed line of select breeding made a thoroughbred animal. Hence we see the importance of every animal in a pedigree; the closer up to the best animal, in the pedigree, the better, and the more remote from a faulty one the better. If the old theory is correct that the "dons" will not go beyond the seventh generation to find their analogue, it proves by the law of logic that the converse of a direct proposition must be as true as the proposition itself; that after the seventh generation no hereditary influence for either good or bad may be expected, and that beyond that degree no importance need be given to ancestral pedigree. Modern breeders accredit heredity with more enduring influence, both for good and evil.

There are some few animals in all breeds that have the power of transmitting certain uniform qualities, in either shape, color or disposition, or all of these to their offspring in an unusual degree. This characteristic we have consented to call prepotency. We are in the habit of using this phrase only in its partial significance—regarding an animal prepotent only whose great influence is for good. An animal may be equally prepotent in its influence for imparting uniform bad qualities in an unusual degree—hence a bad animal in the pedigree even beyond the seventh generation is an eye-sore, unless we are certain of the non-existence of prepotent characteristics.

Armed with a knowledge of those general principles that underlie the art of breeding, and having wisely chosen our breeding animals, with reference, both to their own intrinsic worth and to their ancestral possibilities; having in view only the development of a cow of the greatest possible butter production, we should stand unwavering by our beginning and its object.

It should be the ambition of every breeder to increase the general average of his herd, and not the production merely of a few phenomenal cows.

The true test of a breeder's qualifications is the high general average of his herd—his reproach—a few good animals and many culls.

The uniformity of a herd largely depends upon a strict adherence to a line of breeding based upon the original cows of the herd and their descendants.

No one can maintain uniformity who often breeds from new accessions to his herd of miscellaneous bred cows; since however meritorious may be the animals introduced, time alone can attest the character of their offspring. By adhering closely to the original cows, after a few generations in breeding, we can foretell with reasonable accuracy the future value of every animal, by knowing all the hereditary tendencies of its ancestry.

No one, therefore, can prove himself a great breeder in a few years, but only by the labor of a lifetime. Sufficient time must elapse to enable the great breeder to stamp an indelible impress upon, and create a family characteristic to his animals that will be transmitted for many generations, and the impressive characteristic so imparted must be of great excellence.

The body formation of the Jersey, not essential in the production of milk and butter, nevertheless become of sufficient commercial value to make it an object to secure as much style, beauty and richness as possible. Size and vigor of constitution are always essential.

Breeding for a secretion, and one of special quality, being the greatest objective point in Jersey breeding. Our efforts in securing symmetry in form are often thwarted, as the richest Jersey bulls sometimes are ungainly beasts in form. While, therefore, we have less opportunity to adhere to our ideal form, there is a general conformation in the milch cow, distinct from that of the beef, which enables us at all times to keep in view of its essential points—a depth and breadth of carcass that insure constitutional vigor, accompanied by a muscular development not inclined to fat. No breeder of the Jersey should allow himself to be seduced from the true line by the clamor of the general purpose man. This is not the age of general purposes. Those succeed best in life who have a specialty. The man who treats for success upon every industrial battle-field, generally dies in the alms house. In like manner he who attempts to make a general purpose animal out of one bred to great excellence for a special purpose, simply undoes what has been done, and to no purpose.

In coupling the best, and in standing by the original herd, we are often confronted with the question of inbreeding—how far can we go? How long can we continue in this line?

The extent to which inbreeding can be successfully practiced, depends largely upon the intelligence and close observation of the breeder. In the hands of a master workman there is scarcely, in my opinion, a limit to its use.

The great breeders of historic fame, pioneers in the art of improving domestic animals; men who made the greatest impress and improvement upon the animals bred, pursued this system, as no modern breeder, seemingly, has dared to pursue it.

It would hardly be controverted by any intelligent breeder of Shorthorn cattle, that the Collings Brothers made greater improvement upon the original Leeswater cattle, than has been added to that improvement by all subsequent breeders of Shorthorn cattle.

It is the history of their system that after selecting a breeding herd they seldom introduced new blood or strange animals, and in this system of close breeding did not hesitate to breed a favorite bull to his own daughters in an unbroken line to the fifth or sixth generation.

Bates and Booth, distinguished English breeders, successors to the Collings Brothers, pursued much the same line of breeding, and stamped their cattle with family characteristics so strongly marked that even a novice, can distinguish the descendants of their respective herds to this day. If incestuous breeding necessarily impairs constitutional vigor, accompanying that condition would be loss of power to transmit family characteristics. No such evidence is to be found among the descendants of these distinguished herds. That incestuous breeding will multiply the diseased units or tendencies that may exist in the family is unquestionably true; but no more so, than would be in case of outbreeding between two animals, whose respective families have the same disease tendency in common. It is useless to cite results to prove the success of this system of breeding, when intelligently pursued. All the improved breeds of domestic animals owe their existence to it, and could have been produced in no other way. While it will intensify pre-existing disease tendencies, it is at the same time the short-hand method of intensifying pre-existing desirable points, without which the life time of man is too

short to prove himself a great breeder. I am inclined to believe that much of the prejudice against inbreeding is the result of hastily drawn conclusions from observations made upon the subject, as related to the human species.

I think it is a common belief in the absence of information to the contrary, that laws, among both civilized and semi-civilized races of men, where existent, prohibiting the intermarriages of those of certain degrees of consanguinity, are based upon the idea that such close intermarriage brings physical and mental deterioration.

The solution of this problem must be sought in times antedating authentic history, and among races and people's preceding civilization. The time was among primitive man, when woman was the common property of the clan or tribe, and is so now among some of the most savage races of men.

The interdiction of intermarriage between those of close relation by blood is a statute of civilization, and not a law of nature. It was enacted in the interest of the religious and moral nature of man, and not in protection of his physical and mental development, as most people believe.

Instead of being promotive of these latter conditions of man, they stand in the way of their improvement. Since but for the moral and religious teachings of the world, and the moral and religious character of man as developed by such teaching, that puts as of little importance physical development unaccompanied by corresponding moral worth, man as a mere animal, could by a system of close inbreeding be improved as much above the average physical condition of his race, as the improved breeds of lower animals are superior to the wild native races of their kind. The moral and social condition of civilized man forbids the thought. If the children of the same family were not prohibited from, from love-making, courtship and intermarriage, by both the laws of church and state, as well as by the still stronger law of public opinion, the name of chastity would become obsolete among the children of men—hence the prohibition.

There is no sufficient data to prove that among races where these prohibitions do not exist, and where sexual promiscuity prevails, physical deterioration follows.

Good feeding is the counterpart of good breeding, and he who is not willing to supplement his intelligent breeding by generous feeding should not embark in the calling. The mission of the Jersey is to teach the world to like good butter, and to supply the demand. Butter and cream are the produce of generous feeding. The skim milk of the native scrub, fit only for blueing, may flow in small quantity from wind and water, as flows the sap from the maple; not so the Jersey product. Twenty years ago the Jersey was regarded as merely ornamental, and called the "rich man's cow." She has demonstrated her practical value as a dairy cow, and become the cow of the poor man as well as the rich; but there is one thing she can never be and remain profitable, and that is the *stingy man's cow*.

Passing from the consideration of the natural and scientific features of the profession, we will enter the fancy and fashionable. Unfortunately in Jersey breeding, as in all other business relations in life where fashion and fancy rule, reason abdicates the throne. Still more unfortunate for our interest, with a large class the decrees of fashion outweigh every other consideration, and give to the animal "fashionably" bred, but without individual merit, a greater commercial

value than one of "plain" pedigree possessed of the greatest excellence. The arbitrary decree of fashion can be neither successfully ignored nor successfully provided for. Her standard, while in force, rules the hour, but her fickle nature is such that in breeding by the time we have adjusted our herds to meet her demands her style has changed, and what was fashion yesterday is stale to-day, and gives way to the latest.

The color line has stood the test of time and is still with us, but its endurance is not entirely due to the decrees of fashion. "Solid color, full black points" once seen so often in the herd book and elsewhere as a mere descriptive feature of the animal, become in the opinion of new beginners in Jersey breeding the evidence of "pure blood," or of greatest excellence. This idea, supported by the preference that many have for unbroken color as a thing of beauty, has given the color line a longer stay and greater commercial value than it would otherwise have obtained.

While color has absolutely no intrinsic worth, and bears no relation whatever to value, it is true, I think, a much greater per cent of excellence will be found among the broken colored animals of the Jersey breed than among those of solid colors; but color, *per se*, has not produced the difference. The practice of breeding for color to meet the demands of fashion and trade often leads away from the path of milk and butter. Hence the deterioration.

To my taste the attempt at breeding solid colors has already destroyed much of the beauty of the Jersey. Solid color in breeding means, necessarily, dark colors. To attempt the lighter shades leads to too many accidents in getting the "hated fawn or white." Hence the beautiful straw-colored, or buff, is disappearing, and the miserably ugly mulberry and smoking, dirt-colored fawn is fast becoming the prevailing color of fashion.

White color in man or beast, in the rainbow or in the flower garden is but a freak in nature; it is nevertheless a thing about which we instinctively form likes and dislikes so strong that reason cannot overthrow and time only can stale them. I believe, however, the time will come when the beautiful parti-colored Jersey, beneath whose white hairs shines forth that golden yellow skin not seen elsewhere, will become as much in demand as she is now out of fashion.

In regard to the escutcheon, I would remind you that in the early days of Christianity it was only those who were unwilling to accept a living Savior that wanted a sign. I believe in the Jersey and not in the escutcheon. Judged by the sign she would be a failure. While in my opinion she is the greatest of all dairy cows, she has the poorest escutcheon indication of any breed. The shorthorn, bred away from the dairy toward the shambles for a half century or more, has the highest escutcheon marks of any breed that I have seen.

Fashionable Pedigree. In pedigree fashion seeks the company of merit, but is often misled. While the breeder's maxim that "blood will tell" is true, it is equally true that "ink will tell," and it is not always an easy matter to determine in a given case the relative force of ink and blood as valuable factors in a pedigree. A well advertised bull of fashionable strain, but of no individual merit, will often give greater commercial value to a pedigree than one of much more value that is comparatively unknown. In this case it is "ink that tells."

Testing. This is the only true method of arriving at any accurate estimate of the value of an animal, and is a practice that should become every day in use, with this injunction ever borne in mind, that it is the capacity of the cow that we are testing and not the elasticity of our consciences.

Butter Strains. The Jersey breed is the true source of the butter strain; but it is true of the Jersey, as of all other breeds, that some animals are superior to others. To breed from the best and concentrate the blood of the best is the true line in breeding. This practice in time will develop families that, as such, have superior merit. Whether we have consummated such an end at this date, though somewhat doubtful to my mind, is a pretty generally admitted fact to the majority of breeders.

There is a difference between a family and a strain. A family embraces within its circle only such as have blood in common and traced to a common source. The small number of pure Alpheas that cluster around the old cow and trace with no outcross to Saturn and Rhea constitute a family. Most all of the other so-called families are only strains in which certain blood lines predominate, but more or less alloyed with outside blood. That there are some strains of blood of great value in breeding is too generally admitted to necessitate argument, and it is only in the interest of new beginners that I am justified in alluding to some of the more distinguished among them. When we find many illustrious descendants from a certain sire or dam, either directly or remotely, or find in the list of the ancestors of many distinguished preferences that such sire or dam maintains a conspicuous presence, we naturally give to such animal the relation of cause to effect and regard the blood *a valuable strain*. Judged by this standard, the blood of Pansy 8 gave to the Jersey breed a valuable strain; also the blood of Albert 44. When we find in the pedigree of distinguished animals two ancestors conspicuously associated, each of which has given proof of being a valuable strain, and discover multiplied good results, we call the blending a "nick." Such a "nick" or blending of blood lines, with good results, occurs between the descendants of Pansy 8 and Albert 44, and which combination we call *Albert-Pansys*. By the still further blending of another valuable strain, that of Marius, with the *Albert-Pansys* we arrive at the Signals. Now, whether the descendants of Signal owe their excellence more to the Pansy or the Albert or the Marius blood can not be fully determined. The reasonable probability is that it is due to the successful combination of these three valuable strains. Most breeders place more reliance upon the combination of great strains than on the merit of one only.

The blood of Rioter is esteemed by breeders as a valuable strain, but has produced great results only when crossed with other established strains, as the Alpheas and Victor Hugo—combined with the latter it created the St. Lambert strain.

Rioter's greatness was not phenomenal, but due to the high character and great excellence of the herd from which he emanated, the outgrowth of forty years' intelligent breeding by a master hand. To give you a correct exhibit of the real value to American-bred Jerseys of the Danney blood, I will quote, without comment, the two importations through which it was obtained, and a third, the one that appears to have given the most successful outcross:

In 1868, imported by Sheldon Stevens:

Bull—Victor Hugo, No. 197, St. Clement, I. J.

Cow—Pauline, No. 494, St. Owens, I. J.

Cow—Hebe, No. 489, St. Owens, I. J.

Cow—Portie, No. 496, St. Peters, I. J.

Cow—Bertha, No. 490, St. Peters, I. J.

Cow—Ophelia, No. 493, St. John, I. J.

Cow—Lisette, No. 492, St. John, I. J.

Cow—Lydia, No. 495, St. Savior, I. J.

Cow—Bonnie, No. 491, St. Savior, I. J.

Cow—Amelia, No. 484, Shano Farm, England.

Cow—Juliet, No. 485, Shano Farm, England.

Cow—Defiance, No. 196, Shano Farm, England.

Cow—Pride of Windsor, No. —, Shano Farm, England.

In 1869, the Hoe's, Peter S. and R. M., imported the following animals:

Peter S. Hoe—

Bull—Matchless, No. 906, Thos. Atherton, Spok, England.

Cow—Minnie, No. 2386, Thos. Atherton, Spok, England.

Cow—Katie, No. 2389, Thos. Atherton, Spok, England.

R. M. Hoe—

Bull—Dolphin 2d, No. 468, T. M. Wilson, England.

Bull—Rioter 2d, No. 469, Marq. of Bristol, England.

Cow—Proserpine, No. 1184, Rev. Martin Shane, England.

Cow—Dido, No. 1234, Mr. Herd, England.

Cow—Vesta, No. 1235, Lord Rokeby, England.

Cow—Meeta, No. 1236, F. A. Hosobel, England.

In 1873, Peter Leclair imported from England:

Bull—Stoke Pogis, No. 1259, E. T. Coleman, England.

Cow—Matilda, No. 3237, Wm. Duncan, England.

Cow—Marjoram, No. 3239, Wm. Duncan, England.

Cow—Violet 3d, No. 3240, Wm. Duncan, England.

The place of the breeding of these animals is the point to which I desire to call attention. If, however, I were to ask the intelligent breeders of Jersey cattle throughout the world to name the strain that, in their opinion, had given the most certain and uniform good results, and to name the bull from whom it appears to have emanated, the animal bearing the relation to Jerseys that Messenger does to the trotting horse, I presume a large majority would name Old Noble. So many distinguished animals have descended from this strain of blood, deemed worthy of being considered as original fountain heads of new strains, that the Noble strain has not been given proper consideration because of divided honors between many distinguished sires and their common, illustrious ancestors. It will be but a few years until the name of Stoke Pogis 3d, Signal, St. Helena and Duke of Dashing-ton, will fall behind in our pedigrees, to the third and fourth remove, and become as Albert Pansy, one now too far removed for great value, with no equally distinguished successor to either, while Old Noble will be supported by his illustrious

descendant, Imp. Tormentor, still living, with some years of usefulness before him, the sire of twenty-one tested daughters now, and a reasonable expectation of ten more from daughters born and unborn.

What constitutes a fashionable pedigree now, is known; what will constitute such five or six years hence can be conjectured only.

Upon the merit of the conclusions of this paper I invite your unsparing criticism, since it is only by a comparison of ideas and the questioning of nature that we learn wisdom.

Mrs. Kate M. Busick, of Wabash, Ind., read the following paper on

"OUR JERSEY."

"Our Jersey" was not an imported cow, but first saw the light amid the rock-ribbed hills of the old "Granite State." It was a bleak night in December. The snow-laden clouds, swirling heavily by, hold in their rough embrace huge feathery masses that in their noiseless descent soon clothe hill and dale in a mantle of glistening whiteness. The keen north wind shrieks and blusters through the leafless branches of the tall swaying oaks and elms; now roars and raves adown the deep gorges among the ravines, or whimpers at the key-hole like a ragged penitent supplicating pity. The laughing brook that all the summer long played hide and seek with sun and shadows amid the green and gold of forest leafage, now lies frost-bound, a prisoner in the icy shackles of stern Winter's forging. The dainty wild flowers, in winter hoods of gray, are snugly sleeping 'neath their russet coverlets of mold, all unconscious of the wild, fierce winds, that are holding high revel above their lonely brown beds. The busy bees have ceased their droning hum and lie torpid amid the sweets of a thousand rifled flowers. The feathered songsters have long since sought the sheltering warmth of a less frigid clime, and every vestige of summer's life and gladness is hushed and hidden like gray snooded nuns in a wintry garb of snow.

A little, brown, weather-beaten house, perched high among New England hills, sheltered on three sides by ragged cliffs, that in the glory of the departed summer bore a wealth of herbage, upon which a herd of gentle, soft-eyed Jerseys browsed in all the contentment that from a purely animal existence springs. Within the low-roofed dwelling, the last lingering odors and notes of Christmas preparations were palpably evident, while the blazing logs, heaped high in the wide, old-fashioned fireplace, with the warmth and light pervading every nook and cranny of the farm-house, and its simple, unpretending appointments, afforded a deep contrast to the inclemency of the weather without. A rush of icy wind, accompanied by a scurry of snowflakes and stamping of feet, announces the advent of an outsider, as a sturdy, brown-eyed, rosy-cheeked farmer's boy enters almost breathless from his tussle with the fierce messengers of "Old Boreas," and startles the family with the statement: "Daisy [the petted cow of the herd] has just dropped a heifer calf, and unless it is at once taken to warmer quarters, it will perish with this bitter cold." At once the ordinary calm of the farm house is broken by a little

ripple of excitement, for Daisy is a direct Island importation, and is justly entitled to the appellation of "Queen of the Herd," as well for her wonderful record of milk and butter production as by her royal blood and lineage.

A warm bran mash, in which a quart of whole flax seed scalded has been thoroughly mixed, is hastily prepared, together with a large wooden pailful of tepid water for the new mother, and armed with a soft woolen blanket, in which to wrap the recent arrival, the whole family sally forth to greet the newcomer, and give it a Christmas reception befitting its rank and circumstances. Shaking down an additional bed of warm oat straw, making the dam comfortable in her roomy box stall, taking precaution to stop every crack and crevice, that the icy wind might not find an entrance, the family again take up their line of march for the house, this time tenderly bearing the tiny calf to the steaming warmth of the commodious kitchen. Here let me digress one moment from my subject, if digression it may be called, to urge upon every one of you a humane recognition of motherhood in the physical needs and requirements of all animals under your care and control. There is an instinct of protection amounting at times almost to fierceness in the mother-love of the animal race, as full of tenderness towards their young and helpless offspring as every human mother feels for the baby she cradles upon her bosom, and as I have seen the look of unutterable yearning in the eyes of a mother cow, and heard her low moan of dumb entreaty as her calf was taken away, I've wondered much how men could treat with blows and curses the gentle, patient, helpless creature; for ever since the Babe of Bethlehem was cradled in a manger motherhood has a "divine right" to be respected and cared for in every phase of animal as well as human life.

To return to my subject. At first it seems like an even race between death and the doctor as to which shall win and wear the victor's honors. Warming a teacupful of evening's milk, adding thereto a tablespoonful of old rye whisky and ten drops extract of Jamaica ginger, a tablespoonful of the mixture is slowly turned down the baby throat, care being exercised to prevent its being strangled in the operation, and this is repeated at intervals of five minutes until all is taken, while a gentle rubbing with hot woolen cloths is kept up until a brisk circulation is effected. Meanwhile the sluggish current of blood is slowly traversing the veins, the feeble action of the heart grows stronger and the subtle principle we call Life is surely asserting its supremacy. After an hour's faithful exertions the farmer looks up and says, "The calf will live." Then snugly tucking it up in the blanket, placing a barricade of chairs about its resting place, that it may not endanger its life by contact with the fire should it get upon its feet and essay to use its awkward, shambling legs during the night, the family retires, all but the careful housemother, who, to "make assurance doubly sure," throws a few additional billets of wood upon the fire, draws up the "old oaken settle," flings over its ample proportions the bearskin robe that has done duty so long and in such multifarious ways, heaves a deep sigh of relief and weariness, and sinking down amid its folds, is soon "sleeping the sleep of the just."

Long before old Chanticleer has proclaimed the advent of a new day the awkward calf is upon its tottering legs, striving to draw nourishment from the chair backs by which it is surrounded and guarded, and so soon as the family is astir, it

is again carefully bundled up and carried to the proud and happy mother in the box stall, to receive its first breakfast direct from Nature's source of supply, without the intervention of a spoon, or the clumsy, but well intentioned efforts of a foster-mother clad in blue overalls and cowhide boots.

Christmas greetings over, gifts exchanged and duly admired, the family surrounds the well-spread breakfast-table, and as a matter of course the principal topic of discussion is the "new calf," and in whom the honorary title of ownership shall be vested. Dick says, "I think it ought to be considered my calf." "By what right?" query the rest. "By right of discovery, to be sure, the right which the Pope and all Christian kings agreed to give each other, you know, ages ago, when they so generously parceled out other people's possessions among themselves." This sally is received with laughter, for Dick is the wit of the family, as well as the shirk. But after all *pros* and *cons*, it is decided that mother has the best right, because upon her will devolve, after all, the care and rearing of the animal; so after a little good-natured sparring, its nominal possession is by common consent assigned to mother, together with all the rights, appurtenances and trouble incident to calfhood. Next in order comes the important question: What shall we name it? A very momentous one, too, judged by the enthusiasm displayed by the champions of the several names proposed, until it is finally decided, by reason of its birthday, as well as lineage, to call it Christmas Daisy. So it is forthwith assigned a place of honor in the Herd Register as Christmas Daisy.

The rude blasts of winter have given place to the balmy gales of spring, and "the time of singing birds has come." Nature in her ever-renewing miracle of life issuing from death, is clothing the rugged hillsides with a robe of softest downy green. The imprisoned waters of the brooks are leaping and flashing in the sunbeams like elfin spirits at play on "mid-summer's eve." The herds, liberated from the close, dark stalls of their winter quarters, are browsing with unwonted energy upon the young fresh springing grass, while Christmas Daisy, blithe, as the gayest, nibbles daintily at the crisp herbage.

Spring waxes into summer, wanes into autumn, and perishes amid the snows of the old year. Time's ruthless hand has wrought many changes in the passing twelve months. In the happy household, that erstwhile flung forth its Christmas greetings with such lavish profusion, there are saddened tones and hushed voices; in the family circle there is a vacant chair. Aching hearts are lounging for the touch of a vanished hand, or to hear the sound of a voice that forever is stilled. Again the broken circle gathers about the family board on Christmas morning and in subdued voices take counsel of each other for the future. The father's empty chair proclaims more eloquently than words the loss all feel, yet dare not speak. In reverent phrase the mother invokes a blessing on the morning meal. Once more the family is in consultation, but the good-humored badinage and gay jest of a year ago have given place to a grave discussion of sternest necessity, that is finally terminated by the decisive statement of the mother in these words: "Yes, the heifer, Christmas Daisy, can best be spared and she must go."

Acting upon this suggestion, a letter is at once written, consigning Christmas Daisy to the grand combination sale of Jerseys to be held in New York City in April. We pass over the tearful parting with the petted animal, as the children

whose playmate she had been all the happy summer days, crowd around her to give her a last affectionate hug, and say amid their sobs, "Good-bye, Chrissy, good-bye;" to behold her again as she stands upon the auctioneer's block. Shall I describe her to you as she appeared before the crowd of buyers assembled from all parts of the country? Her delicate head raised high in the air, like a startled fawn, she gazes upon the strangers about her. The soft, liquid brown eyes seem to have a homesick look in them, as she turns her head from side to side in a vain effort to discover a familiar face. Fine, incurving, wax-like, yellow horns, tipped with black; almost transparent ears heavily fringed with the same color, adorn her small, shapely head; dished-face with black muzzle, surrounded by a dainty white fillet, nostrils wide and thin like a blooded racer; trim, slender neck; long, deep body; well-sprung ribs; short, fine legs; level back, long, slim tail, with heavy, black switch sweeping the ground. Unlike the craze for solid colors of the present day, she was a spotted beauty. Her fine, short hair covered a skin of deep, golden color, rich and mellow to the touch as plush, while the white patches that irregularly flecked her sides, had the velvety touch only known to the Jersey. A square, well-balanced udder, covered with short, silky hair, together with exceptionally large-sized teats, well spread apart, gave token even in the immature heifer, of the future merit and usefulness of the cow.

Straying into the exchange out of sheer curiosity, with no thought of buying. I observed the spirited bidding as the auctioneer exhibited the beauty of the animal and dwelt at great length upon the richness and butter qualities of her Channel Island ancestry. I quote his words: "Her dam, an imported cow, made 18 lbs. per week, Isle of Jersey weight, equal to 20 lbs. avoirdupois. Her Island sire, son of a cow never beaten in the show ring, and sire of seven cows with tests ranging from 15 to 26½ lbs. per week, gives unmistakable evidence of her royal breeding." The bidding waxes fast and furious; higher and yet higher still the figures climb, as the auctioneer hurls at his nodding and excited bidders, freshly remembering ancestral virtues, until wearied out with his vehement rhetoric in a forced pause of eloquence (for want of breath), he catches sight of my eager, wistful gaze; the "chump" takes it for granted that I want the heifer, and she is "knocked down to me on the last bid." Before I had time to collect my scattered wits, and explain that "it wasn't me, but the other feller," and to expostulate against the greatness that has thus been thrust upon me, in becoming the possessor of what he so glowingly denominated "the plum of the sale," though why a heifer should be likened unto a plum I never could see; probably it is a species of "horse talk" translated into Jersey. Be that as it may, I was *nolens volens* the duly accredited purchaser of the "purtiest cow critter" (as a yeoman standing near me expressed it), as I had ever seen.

So soon as my surprise and elation over my possession had somewhat subsided, the query arose: How shall I ever get her home to Indiana? After a long and laborious tussle (metaphorically speaking) with various railroad officials, express messengers, train men, *et al.*, I succeeded in landing my prize safe in my Hoosier home, but horror of horrors! Imagine, if you can, my dismay when the express bill of charges was presented—\$57.80. As a friend of mine remarked to the agent, the biggest thing about the calf was the "bill of fare." At first I was fearful of

the effect the close confinement in the crate during her long journey might have upon her, but in twenty-four hours I turned her out on the lawn, and her gambols as she tried to romp with our staid old Newfoundland, soon convinced me that she was none the worse for her long, tiresome ride. She rapidly recovered from the fatigue of her trip and speedily made friends with every one.

As day by day I watched her rapid growth and development, the question presented itself: Why not make her the subject of a practical test? Pending the decision of the matter, I went out one morning, as was my custom, to the pasture lot. "Chrissy," for that was her pet name, came up to take a bit of bread from my hand, and in doing so I detected what I believed to be an abnormal udder development. Closer scrutiny revealed the fact that her udder was distended apparently with milk. To my surprise she stood perfectly still while I attempted to relieve her of what I supposed at first to be an unnatural secretion of colostrum. After milking out the greater portion of the contents of her udder, I returned to the house puzzled over my discovery. Repeating my visit the following day, I found her udder, if possible, fuller than the day before. I was in doubt what to do. All the traditions of my youth relating to wonderful cows rose up before me, together with the oft-repeated injunction: "Never milk a heifer before dropping her first calf," though why such an operation should never be performed, no reason was ever given, except the very vague one, that it would be productive of disastrous results.

To sum up, the case narrowed itself down to these limits: If I milked my heifer I might cause her an injury thereby; if I did not milk her I was sure of her being injured. So of the two horns of the dilemma took what appeared to me attended by the least risk, milked her and took the chances; at first but once a day, but as the flow increased twice daily. Testing her milk by boiling I found it perfectly good. The first milking saved was set away to ripen, cream taken from it beaten up in a quart bowl with a silver fork, and in just five minutes a lump of beautiful golden butter almost the size of a goose egg resulted. This determined me to save the milk of one day, which was accordingly done, with the following results: Morning milk, four and one-half pounds; evening milk, five pounds; total, nine and one-half pounds. This, set in a stone jar, ripened in twenty-four hours after last milk was added, then churned in a bentwood churn with crank dasher, yielded in just six minutes after placing milk in churn the loveliest golden butter I ever saw, which, salted, worked, allowed to stand six hours, then reworked, weighed one pound one and one-half ounces, and this on grass alone. To say I was delighted with "Our Jersey" would but feebly express my ecstatic frame of mind over the possession of my prize, and I vowed henceforth to devote my best energies to the task of developing her wonderful capabilities. To this end I fed her on the most bone and muscle-forming foods I could find, nor did I neglect the fat-forming constituents in her ration, for I as well as she had a double office to perform; she had her unborn calf to nourish as well as repair the constant drain made upon her system by her precocious milking qualities, while it was necessary for me to not only guard against overtaxing her energies, but to feed in such a manner as to keep her digestive organs in good working order, while at the same

time supplying the elements necessary to keep her growing vigorously—a rather difficult task, you must admit. To do this the strictest care was necessary. Fortunately it was the season when grasses were lush and in their prime. She had the run of a pasture well set in blue grass, dotted with low, wide-spreading beeches affording ample shade from the sun's rays; a mess of green timothy and clover, equal parts, run through a feed cutter and mixed with one quart each of ground corn, oats and wheat bran night and morning; this with free access to pure spring water and salt at all times within her reach. As she approached calving time her udder development became remarkable, attaining a size rarely seen except on fully matured cows.

At length one fresh dewy morning I went to the bars, but my pet failed to respond to my call. Looking across the lot I saw her standing under a tree. She gave a low "moo" in answer to my coaxing, but refused to stir. Going down to where she was, imagine my surprise at finding a beautiful calf, "just the image of her mother," lying in a bed of fragrant clover. You may be sure I lost no time hastening to the house to publish the joyful news. Yes, "Chrissy" had dropped her calf at the age of sixteen months nineteen days, having come into milk when but thirteen months sixteen days old, and the calf instead of being little, scrawny and stunted, was remarkably large, thrifty and vigorous, and, contrary to preconceived fears and doubts, both mother and calf did well. No appreciable gain in her milk took place until she had been fresh three weeks, when her flow began to increase steadily until it reached four gallons per day. Keeping pace with her age and growth, her rations were steadily augmented, but at no time was she ever fed beyond what she would readily assimilate. Beginning with one pound of butter per day at fourteen months of age, she had reached a capacity of fourteen pounds per week as she rounded her second year. For a period of several years she appeared to be at a standstill, easily making her fourteen pounds in seven days, but never going beyond it and never going dry. Casting about in my mind for a reason for this I bethought me to try to dry her off before dropping her next calf. With great difficulty I succeeded in doing so, and to my surprise she immediately began to lay on fat, something she had never done before. I have found in my experience of later years that if a cow contracts the habit of milking continuously from calf to calf it is almost next to impossible to dry her off. But to return. With her next succeeding calf, she broke her record by making twenty pounds of butter per week; this with the same care and feeding she formerly had. This result opened my eyes to one very important fact, viz.: a cow can not do her best unless she has a periodical rest from milk giving. No matter how you may feed and coddle your cow, nature demands that the milk secreting functions should have a rest from their labors, else she will take her revenge in a decreased flow at the very time you are naturally expecting greater results. In summing up all the virtues and excellences of "Our Jersey," let me say that at the age of sixteen years she is still a well-preserved cow, and although she has lost the rounded outlines of youthful beauty, she still retains much of her youthful excellence, gives us a calf every year and is capable of sixteen pounds of butter per week without forcing. And when

nature's forces succumb to age and death closes up her mortal career, you may be assured no pet of the household will be more greatly missed or sincerely mourned than "Our Jersey."

Following the reading of this paper, an interesting discussion was had, led by Mr. Robert Mitchell, of the State Board of Agriculture, who alluded to the valuable matter contained in the papers read, and urged upon breeders the importance of keeping up a display of dairy products in connection with the Chicago Fat Stock Show, and not surrender the field to the manufacturers of oleomargarine.

Mrs. Busick suggested that the directors of the Fat Stock Show seemed to cater to the manufacturers of bogus butter, and that fat stock and oleomargarine seemed to go quite well together.

Capt. Jackson said that inasmuch as he could produce a pound of butter, which he could sell for 30 or 35 cents, as cheaply as the beef breeder produced a pound of beef, he would produce butter. He had no prejudice against the beef breeds, but he was prejudiced in favor of the Jersey.

Dr. Levi Ritter spoke of the necessity of weeding out poor animals. That in all breeds there would be found inferior specimens, and for the reputation of the Jersey cow and in the interest of those who breed her, the poor ones should be knocked in the head.

Dr. Voyles suggested that the fault so often was due to the owner that in many cases the question would become a serious one as to which should be hit, the cow or the owner.

Mention was made of the decadence of the craze for solid-colored animals, and that now only the beginners, young breeders and men who wanted cattle for mere show paid any attention to color.

Prof. Short called attention to the fact that the Jersey was pre-eminently a butter cow, and that many of the largest butter tests were made from cows which produced only a moderate quantity of milk.

Prof. F. G. Short, of the Wisconsin Experiment Station, read a paper on

"THE PLACE AND WORK OF THE CHEMIST IN TESTING ANIMALS."

The Jersey is essentially a butter cow; that is, with a medium flow of milk we have a maximum percentage of butter fat (by maximum fat I mean that the Jersey milk is richer in butter fat than that of any other breed, and not that the maximum per cent. of fat has been obtained.)

This has been brought about by the constant use of the churn as a test, and it is of the churn, its place in testing, where it has failed and where it has helped, that I wish to speak first. The test is divided into the following steps: weighing the milk, setting the milk, ripening the cream, weighing and churning the cream, weighing, working and salting the butter. Any one who has had any experience with the above processes knows that at every step of the work there is more or less loss of butter fat. But few appreciate, I think, how great this loss may be, if the most minute attention is not given and the utmost precaution taken at every step of the process. The first loss comes under the head of fat left in the skim milk.

This will vary according to the care with which the milk is set, whether it is left standing in the cans before being put into the cold water, and also on the temperature of the water in the tank. Negligence in either of these directions will cause a loss amounting in some cases to 30 per cent. of the fat present, while 10 to 15 per cent. is not an uncommon loss. This would mean in the case of a 14-lb. cow a loss of from 1.25 lbs. to 1.7 lbs. of butter. This, coupled with the fact that there is milk from which not even the greatest care in creaming will recover more than 75 per cent. of the fat present shows us how great an obstacle to accuracy we meet in the first step of the testing process.

The second source of loss is in the churn. Aside from the individual peculiarities of cream, which varies greatly with different cows, the manner in which the cream is ripened and churned largely affects the yield of fat. A thorough and even ripening is of the first importance if we wish to churn out the maximum amount of butter, and who shall say just when the cream is in this condition? I know that experience will go a long way in determining this point, but even experience may fail when it comes to the question of churning the cream of individual cows. The question of temperature is of as much importance as that of ripening. The use of a thermometer is absolutely necessary, but even with the thermometer we can not say exactly what temperature is the best for churning. Jersey cream certainly requires a higher temperature than Holstein cream, but the most we can say is that Jersey should be churned above 60° Fahr., while Holstein requires a temperature below 60° to obtain the best results. The extremes may be 56° for Holstein and 65° for Jersey cream. But in individual cases the Jersey may run below 60° and the Holstein above 60°. On these two questions of ripening cream and churning temperature depends whether we shall have 5 per cent. or 25 per cent. of our fat in the buttermilk.

Individual variation in animals is another point which may cause the test to be incorrect. Breeders have not as yet given this point the attention that it deserves. The knowledge that a cow by the churn is a ten-pound cow, while in reality she is giving eleven pounds or more of butter per week, should cause us to improve our methods in two directions. In the first place it shows the necessity of improving our methods of handling milk and cream. More care will be taken in setting the milk and churning cream. The temperature of the water in the tank and the cream in the churn will be more carefully looked to. If the deep setting will not recover all or nearly all the fat in the milk, then the centrifugal will. If irregular ripening prevents us from churning out the maximum amount of fat, then the use of a starter and care in regulating the temperature during ripening will give us a more even product.

In the second place, the knowledge that a cow gives unchurnable fat will have a great influence in selecting animals from which to breed. I do not think that there is any doubt that this peculiarity of giving unchurnable fat can be bred into or out of a herd. A cow giving a large amount of fat is too valuable an animal to neglect simply because the churn will not recover 90 per cent. or more of it. Breeding the cow to a bull whose progeny is noted for churning out a large per cent. of fat might give us an animal which would unite easy churning together with a large fat production. In any case it would be a step in the right direction,

and it is certainly a point to which the breeder must sooner or later give a large amount of time and thought. There is no doubt that valuable cows have been lost simply through imperfections in the method of testing. The churn has been of great value to the breeder, but it has also caused him to neglect certain peculiarities in his animals which might have been of great value to him. It has been the means of confining the breeding strains to animals giving easily churnable fat, but it is highly probable that it has given quality at the expense of quantity. Tell a smelter that there \$100 worth of gold in his ore and he is only getting out \$75 of it, and he will move heaven and earth to improve his methods and find a process that will get out all of it. Tell a Jersey breeder that he is getting only 75 per cent. of the fat in his milk, and that consequently his cows are valued at only three-fourths of their true worth, and if he does not immediately begin to improve his methods, or, if they can not be improved, to seek for better ones, he will soon find himself left behind in the race.

I wish to impress upon you the necessity of a breeder of dairy animals having something corresponding to the stop-watch of the horse breeder. The stop-watch in this case should be the pounds and tenths of pounds of butter fat, not butter, given by a cow in one or more days. Deciding the value of an animal by the butter she gives is open to many objections. The standard should be invariably butter fat; that is, the fat itself free from water or cream. It is the only standard which will be the same under all conditions. A standard which may vary 30 to 40 per cent. is not sufficiently accurate from which to draw conclusions on so important a subject as the breeding of dairy animals.

We now come to the question to which all this is preliminary: How shall we test our cows? I say, first by analysis, and second by the churn. You may be surprised, after all that I have said against the churn, to be told to use the churn; it must be used in the test. But the churn has a place in the test second only to the analysis. The analysis first and the churn second. I put the analysis first, because a few hours' work with the analysis will often show that the churn is not necessary. The cow does not come up to the standard and all tedious processes of setting, skimming, ripening and churning will be avoided.

Prof. Short, at the conclusion of his paper, produced and explained a mechanism, invented by himself, for ascertaining the butter fats in milk. Samples of milk were furnished for a public test by Theodore P. Haughey, Peter Raab, J. M. Knox, H. H. Wheatcraft (two samples) and Wm. C. Smock. Owing to the lateness of the hour permission was granted Prof. Short to take the samples home with him and report the results of the analyses to the Secretary.

An interesting discussion upon the subject of the care of the milk, the proper temperature for churning the cream, and the different methods of washing and salting butter.

Prof. Short called attention to the necessity of placing the milk in the cooling cans as quickly as possible after it was drawn from the cow, and that a failure so to do often resulted in a loss of from 15 to 30 per cent. of the butter fats.

A paper prepared by Mr. John Boyd, of Chicago, upon the subject of "Aromatic Butter Automatically Produced," in the absence of the author, was read by the President.

AROMATIC BUTTER AUTOMATICALLY PRODUCED.

The aroma in butter so much sought after and prized by the lovers of fine butter, depends upon several different causes and conditions, one largely dependent upon the other.

First. The fundamental source of supply originates exclusively in the milk itself.

I have found the aromatic principles very pronounced, abundant and most delicate in the milk taken from fresh cows, that is, cows that have but recently calved.

We find it in diminished quantity in the milk from cows that have become pregnant, and as the period of gestation advances the aroma decreases until little or no trace is to be found.

If the milk does not fundamentally possess these aromatic principles it is utterly impossible to supply the deficiency by any human ingenuity.

I find in my experience that the effect of lactic ferment in the cream is to develop the aromatic principles in the butter, and although these principles are very difficult of analysis they are plainly beyond question of a very volatile nature as they are quickly dispelled or consumed by the action of other acids which follow the lactic acid stage and are mainly the result of exposure to the air and changes in temperature.

I am aware that this is not in accord with the oxygen theory, but I don't hesitate to say that in my opinion that same oxygen theory has cost the country millions of dollars. To its agency I can trace ninety-nine one hundredths of the bad butter made from good cream in the United States. Nor does my experience agree with some prominent dairy authorities in the statement that a full development of lactic acid impairs the flavor of the butter, but think that these authorities ascribe to the action of lactic acid effects and results which are produced by other acids of an entirely different nature.

Early in my investigations I discovered that to bring the milk or cream in contact with air to produce the proper acid condition necessary for churning was not only a very uncertain method but also a very unsatisfactory one, as it always introduced the element of decay and produced a deteriorated condition of the product. The longer the cream was exposed the poorer the product became.

Second. The food consumed by the cows has more or less influence over the production and also over the character of the aromatic principles in milk and butter.

Third. Manipulation, which is really the most important factor of all in the manufacture of fine butter. For the simple reason that notwithstanding the milk may fundamentally contain a full supply of the finest aroma, faulty manipulation may dissipate every particle of it and the butter when produced be as devoid of aroma as pure oleomargarine. This is owing to the fact that the proper chemical condition of the cream is not understood or defined, and that no adequate appliances have been introduced to produce that condition with any degree of reliability.

The difficulties in the way of improvement in this line were enhanced by the fact that popular ideas and prejudices relating to the manipulation of cream, dating back for a long period of years (and in some cases emanating from persons who have been considered good authority), have been very much at variance with the best management.

One great stumbling block in the way of advance has been the much vaunted theory, industriously spread all over the country as a valuable discovery, that cream required to be "oxygenated" or "aerated" to produce the much coveted aroma in butter.

Another popular but equally erroneous idea was that stirring improved the cream and produced untold benefits.

The fact is they are twin brothers, born of error, and should be consigned to oblivion as speedily as possible; but perhaps the greatest difficulty of all arises from the fact that no one, professor, layman, theorist or practitioner, could or would define the best possible condition for the cream before churning, yet all are and have been trying to produce that condition.

The truth is, the exact condition was and is largely left to chance and circumstances, and is not measurable by any well defined rule. That this defect in the art of butter-making is a serious one may be gathered from the fact that it is the cause of the bad flavor or want of flavor in butter to the extent of 99 per cent.

I have been for a long time trying to work out this problem: To formulate a set rule, simple and easy of performance, that would, without prejudice to the keeping quality of the butter, produce a uniform chemical condition in the cream and still retain all the original aromatic principles in its composition.

I soon learned by experiment that to produce the necessary chemical condition with any degree of uniformity, and at the same time make the process practical, it would be necessary to have the requisite implements automatic.

This led to the development of my automatic fermenting can, which, by purely mechanical action and without exposure to the air, produces a lactic ferment, rich in lactic acid and without the admixture of any of the destructive elements which go to neutralize the fine aromatic principles of the milk and cream.

By the use of this simple implement in a set manner any novice can produce a lactic ferment of one chemical condition, true and uniform in its action, every day in the year, regardless of seasons or climatic changes. With absolute certainty the ferment will invariably be found ready for use of one chemical condition.

A certain proportion, relatively quite small, of this lactic acid ferment is thoroughly mixed with the cream, the latter having first been brought to the proper temperature in my non-conducting, self-regulating cream vat, when the vat is immediately closed or covered up tightly, so as to effectually exclude the air.

The lactic ferment immediately commences to work through the entire mass of cream. This action, owing to the construction of the cream vat, is continuous and uniform throughout the entire contents of the cream vat, always producing the desired chemical change necessary to perfection preparatory to churning. The

lactic ferment so acts upon the aromatic principles of the cream as to call them out in full development, leaving them in the butter when churned. The result is as uniform as machinery can make it, and the product of the finest quality.

Thus the art of butter-making is reduced to a mechanical operation, one by which a uniform product is obtained with the least possible labor, and with a certainty heretofore unknown even in the best regulated establishments.

Sections No. 2, 3 and 4 of the by-laws were amended to allow the association to elect a secretary and treasurer, instead of being appointed by the board.

It was voted that each member pay an annual due for 1889 of \$1, to meet the current expenses of the association.

The election of officers resulted as follows:

President—D. H. Jenkins, Indianapolis.

Vice President—Dr. D. W. Voyles, Crandall.

Secretary—Wm. C. Smock, Indianapolis.

Treasurer—H. H. Wheatcraft, Southport.

Members of the executive committee to serve for two years:

J. W. Sliger, Richmond; C. C. Crocket, Richmond; Capt. C. B. Jackson, Centreville; Peter Raab, Indianapolis.

The following resolutions were adopted on the report of the demise of Mr. T. A. Lloyd, who had held the office of secretary of the association since its inception.

Resolved, That in the death of Mr. Lloyd the association has lost one of its most valuable members, and that we, as members of the association, sincerely regret his untimely death.

Resolved, That we do hereby extend our sympathy to his widow and five young boys.

Adjourned.

WOOL GROWERS.

The fourteenth annual session of the Indiana Wool Growers' Association convened in the agricultural lecture room, State House, January 23, 1889, at 1 P. M.

Hon. S. W. Dungan, of Franklin, presiding.

The minutes of the last annual meeting were read and approved.

President Dungan delivered his annual address, as follows:

Gentlemen of the Indiana Wool Growers' Association:

The advent of a new year has summoned us from our homes and from our sheep folds, to the pleasant duties of this our annual convocation. The first emotion of every thoughtful heart must be one of gratitude to the all-giver whose kind providence has led us safely along the journey of life to another "mile stone," and has blest us with health, and crowned our labors with a bountiful reward.

We come together as the representatives of a shepherd life. A business alike ancient and honorable. A life that has been adorned by patriarchs and poets from the very cradle of our race, and one that will endure as long as honest industry seeks the highest happiness and greatest good of humanity.

We are happy to announce to you that "Sheep Husbandry" is in a more healthy condition than it has been for the two or three years last past. By this we do not intend to intimate anything sensational. Wool-growing is a business too well established to be affected by speculative booms; nor is it in any real danger from an overstocked market. And yet, old and well established as the wool market is, it is liable to be seriously influenced by the fastidious waves of fashion. A few years ago, fashion made an urgent demand for worsted fabrics, and long wool was correspondingly in demand, but by the time we were ready to supply it, public taste had changed to fine wool, "Saxon or Spanish"

Now the judicious wool grower will not allow himself to be made the victim of these whims. A medium grade of fine wool is always marketable, but it is the dictate of prudence to be always prepared to meet any extraordinary demand of whatever nature it may be, without incurring exorbitant prices for fancy stock. By this we mean that we should not confine our breeding exclusively to one line of stock, but should breed the different leading distinct varieties, as our judgment and taste may dictate, but whatever class we choose to represent in our flocks, let them be of pure blood and of the highest type attainable.

The number of sheep in Indiana, at the present time, is about 1,060,000. Of this number we will not be risking much to assume that one-half are common stock, and we suppose that one-half of the remainder are graded stock or crosses of the pure blooded stock on natives, or various degrees of crossings.

This leaves but one-fourth of the whole number or about 265,000 to be represented by the pure bloods of the different distinct breeds and varieties. The value of the flocks and of annual clips as well, would be greatly increased if we could replace the native breeds by blooded varieties selected judiciously.

One of the reasons why we have not been able to do this heretofore is that our home manufacturers were not prepared to work up our best and finest qualities of wool, and hence the producer of the best class of wool was not able to realize any more for it than the common grades; but that objection is rapidly being removed, and we are now manufacturing the finest woolen fabrics quite largely and chiefly from imported raw material. This should not be. We have the conditions for producing wool adapted to the manufacture of the finest fabrics worn in this country, if not as fine as is produced in Spain or in Saxony. As soon as we have effected the change of our native breeds for pure blooded varieties, it will cost no more to maintain our flocks than before the change, while the annual yield both in quantity and in quality will be greatly increased; and in the *price* as well. It is not to be expected—hardly to be desired—that all of the wool of the country should be of the finer grades, but we should, at least, produce enough of this quality of wool to supply our home manufacturers.

The question of our competition with foreign wool free of duty may be regarded as settled for the time being, and probably for a series of years. And the Indiana wool-grower has less to fear from foreign competition than from the "ranchmen" of our Western plains. While wool of as fine fibre as our best Saxony or Merino may be produced in Australia at a price greatly below the cost of its American rival; yet when we compare the strength of the fibre, our American wool has the advantage. To some extent the same is true in a comparison of our wool of grain-fed sheep with that of the Western plains. It is a well established fact that wool partakes largely of the nature of animal flesh, and requires the flesh forming elements in the food on which the animal subsists, which is found chiefly in grain. If this is deficient, the deficiency will show itself in the weakness of the fibre, or, in other words, in its wearing quality.

Perhaps the most formidable foreign rival that American wool must ultimately compete with is the Argentine Republic in South America. That country, lying between 30 and 40 degrees of south latitude, is an elevated plain admirably adapted to the production of grain and grass, and is now rapidly developing these resources. The samples of wool which that country showed at our centennial exhibition was reported to be of high merit and produced cheaply. But at present the trade of the Argentine Republic is chiefly with England, and will not probably affect us seriously for years to come.

The consumption of wool as a clothing material is constantly on the increase throughout the temperate zone, both in the United States and in Europe; and this increase will continue as people become more intelligent and better understand the laws of health, and are better prepared to conform to them.

Already, in the line of dress goods, wool or silk has nearly displaced cotton fabrics even for summer wear. This substitution of delaines, lustres, etc., will demand a finer grade of long wool than has generally been produced in this country. This demand *must be met*, if we would hold the market. We would therefore venture to suggest to our breeders of long-wooled sheep the importance of selecting rams with fine, lustrous fleeces, entirely free from coarse wool and hair.

It is said that a "hint to the wise is sufficient."

The enormous consumption of tweeds and heavy cassimeres in gentlemen's wear is making a demand for a stronger grade of medium wool, and Shropshire and Southdown wools will find an increasing consumption till wool entirely displaces cotton fabrics from the wardrobe of men of every occupation.

For our chilly, damp, changeable climate, the ingenuity of the future will hardly invent a substitute for wool as a clothing material. But sheep husbandry does not depend on wool exclusively. As an article of animal food, but few varieties can be more cheaply produced than mutton, and none is more digestible nor more conducive to general health. While we say this, we are not ignorant of the fact that an ancient and deep-rooted prejudice has existed against this form of flesh food, but we are glad to know that this aversion is slowly but surely passing away before the diffusion of a better knowledge of the laws of health. It is a fact that pork as an every-day diet is going out of use, and more mutton and beef are used by all classes of people. The result of this change is a marked improvement in the general health, both of country and city. These are facts too important to be overlooked by those engaged in sheep husbandry. In the selection of varieties of sheep, the mutton market should never be lost sight of. It gives us the means of profitably changing the character of our flocks, as the fluctuations of the wool market may demand. Sheep are subject to fewer diseases than any stock on the farm. Texas fever and pleuro-pneumonia may sweep a valuable herd of cattle from the farm in a single month; and cholera may blight the fairest prospect for pork in less time, and even the poultry yard is not secure against these epidemic invasions, but if the sheepfold is secure from the invasion of worthless dogs, the shepherd may rest securely.

It is true that the Legislature has made a feeble effort to protect the wool-grower from this, his worst enemy; but the mutton-loving dog has proved himself a law-defying brute. Though the owner may receive compensation from the special fund, yet that does not make amends for his *vexation*, nor restore confidence in wool as a business.

You would be surprised to know how many men have told me that the dog was the only thing that kept them from raising sheep. And did you ever think about it? The sheep-killing dog seems to be moved by that "total depravity" which prompts him to select the best sheep in the flock as his victims. Wool-growing in our own State is not a special business, but is rather an incident in the general business of farming. However, there are few farms in the State without its flock of sheep, and we undertake to say that no farm is complete in all its arrangements and details without a nice flock of well-bred sheep. Show me a farm on which there has always been kept a good sized flock of well-kept and well-cared-for sheep, and I will show you one that yields annually rich returns in grains and

grasses, for there is *no manure* so rich in *fertilizing* elements as that of the sheep. On the other hand, show me the farmer who has decided that sheep are unprofitable and has dispensed with them, and I will show you one who has paid the penalty in weedy pastures and fence rows growing up in briars and bushes.

We have not properly appreciated the valuable services of sheep, in assisting to keep a farm neat and clean.

I would say, then, to my brother wool growers, "Stand by the sheep," and remember that there is still truth in the old Spanish proverb, "That the sheep, with its golden hoof, turns all it touches into gold," You *have stood by them* while American sheep husbandry has evidently passed through its most severe and trying ordeal, and you may well rejoice in the hope that you will be better remunerated for your labor, and skill in handling your favorite stock in the future, than you have in the past. A small aggregate profit on sheep, beats wheat, with all its labors, expenses and uncertainties, its wear and tear on lands, on men and women, teams and machinery.

The profits on sheep come up twice a year—"a fleece, a lamb."

The raising of cattle and horses are slow and expensive ways of making money. It takes from two to four years for them to come to market, and you know what we farmers some times say: "That they eat their heads off before they are sold." But not so with the sheep; they come up every six months and pay their bill, and never die, or leave the farm in debt. A man once said to me that raising sheep was too much of a penny business. That same man died insolvent, handling Shorthorn cattle on a big scale.

It does not seem much like a penny business, neither, when we consider that over \$500,000,000 are invested in sheep and wool in this country at the present time. We are sure (having had experience in handling all kinds of live stock) that there is no domestic animal that can be handled and manipulated with as much ease and pleasure as sheep. Just think, one man with a well trained shepherd dog can move from one to five hundred head. In fact, they are the very embodiment of meekness and gentleness.

I see in the Breeders' Gazette recently (and, by the way, too much praise can not be bestowed on this paper for the very full and attractive form in which it presents to its readers the proceedings of the many live stock and industrial conventions that meet throughout the State) that Mr. S. J. Grinnell said at a sheep breeders' convention in Iowa that sheep were the best civilizers God ever put on earth. We fully endorse this, and hope to hear from our Iowa brother wool growers through the Gazette.

It is said that we naturally partake of the characteristics of the domestic animals with which we are surrounded. To illustrate: If we raise and handle hogs, and especially if we eat excessively of their flesh, we become coarse and hoggish in our natures. If cattle, especially bulls, we become vicious, and if perchance we should sell one for \$40,000, we might become a little avaricious. If horses, especially the fast kind, we are naturally led to the race track and possibly to gambling. But sheep! beautiful emblems of innocence and purity, naturally lead us into the paths of virtue, happiness and prosperity.

I wish that the author (Woodworth) of the inimitable poem entitled "The Scenes of My Childhood," or "The Old Oaken Bucket," had said something about the old log sheep house on the hill and the stream that ran near it, the gambols of playful and frolicsome lambs, etc. It would touch a responsive chord in my own heart and awaken the sweetest recollections and associations of my childhood days. Yes, I go back in memory over forty-two years, when only a lad of eight, at which age I took upon myself the care of my father's flock. I see a well-beaten path leading from the threshold of the "old homestead," along by the well, where hung the moss-covered bucket, and on by the drying kiln made of stone and mortar with my father's own hands and used every autumn for drying our apples and peaches on (I can almost taste those good Rambo's and luscious peaches now); but up through the orchard this path leads until we come to a high fence, where my father had taken out a rail, through which opening I might pass without endangering neck or limb. I'll never forget how "slick" that rail I crawled through on became. Across the fence into the sheep lot, I see the old two story log sheep house on the hill. The second story is full of sweet-scented corn blades, which all the children, big and little, male and female, had helped to gather and store away. The first story was used for folding the sheep at night. Just down the hill beyond the sheep house I see a clear, rippling, sparkling stream emanating from the old Crystal spring, from which my farm to-day derives its name.

The most of my time when not in school (and we only had two or three months of school in those days) was spent along this stream and with the flock, and it was here I thoroughly mastered the science of sheep "physiognomy," as I knew my flock by their face, and had a name for each one, and always proclaimed with joy and delight the advent of a youngster in the flock. Although nearly a half century has passed, and these dear old buildings and land marks have been demolished, yet the sweet and sacred memories that cluster around them will live as long as memory itself lives. And I have no doubt but some of these reflections and reveries will find a counterpart in the history of some of my brother wool growers here to-day.

In conclusion, gentlemen, allow me to congratulate you as members of the Indiana Wool Growers' Association for what it has accomplished during its brief history. When it was first organized there was only one imported sheep, to my knowledge, owned by a member of the Association. In looking over the reports of the sheep departments of the principal fairs of the Middle and Western States for the past two or three years, I see that members of our Association take nearly all the class and sweepstake prizes of the various breeds exhibited; and if I remember correctly, at our recent State fair two-thirds of the sheep on exhibition were imported, owned and exhibited by our members. But that isn't all. The Shropshire that "swept the platter" at the recent Chicago fat stock show, was imported by one of our members. That is not all yet. The American Shropshire Association, which has been successful beyond the most sanguine expectations of its friends, had its origin in and owes its existence to the Indiana Wool Growers' Association.

Finally I say, Stand by our Association for what it has accomplished in the past, for what it is doing now, and for what it proposes to do in the future.

DISCUSSION.

Fielding Beeler. It is an able address. I commend it in every respect.

J. L. Thompson. It is so good and complete it is not necessary for us to add to or amend it.

Dr. R. T. Brown, Indianapolis. I rise to give expression to a thought that must be taken into consideration in the production of wool. We have been talking long wool and short wool, but there is yet a point that must be an important feature in our discussion on wool in the future; that is, the strength of the fiber, as the wearing qualities are unfolded in its strength. We want a wool that will bear a tight tension, and on that point is based its wearing qualities. It is important that we should take this into account and grow strong wool, especially for those who adopt wool as men's wear in all the rough exercises of life. Cotton or linen at one time was largely worn, but now everybody on the farm wears woollen goods. It is first important that we have wool for our home wear, and to be of good quality depends on the strength of the fiber. If you feed your sheep on rich food the fiber may be no longer or finer, but the wool will be much stronger than on the sheep that picks up its living where it can get it. That is just the difference between your sheep's wool and the wool on sheep shifting for themselves. Yours being well fed, you clip every time strong wool. It may look like the wool grown on the plains, where the sheep nibble the buffalo grass, but you find it has not the fiber; there is great difference in the strength. I think we are overlooking some important matters in feeding. Oats are perhaps more of a flesh-forming feed than any other, and make strong wool on that account. It is richer in the flesh-forming element, which gives strength to the wool. Again, an important element in sheep-feeding we are not paying sufficient attention to is oil cake and cotton seed cake, now coming into use. I made an examination of that kind of cake in 1872, and found it contained 40 per cent. of albumen, while our best oats contained only 20 per cent. If we want to make good wool we must give food which will produce it. If we are going to make mutton we feed on corn, which will make fat very fast. But if you want to make wool fast use cotton seed or oats.

Dr. N. D. Gaddy, Jennings County. If sheep are deprived of water for a considerable length of time it causes a weak place in the fiber. I think it is also detrimental to the good qualities of the wool to house them closely, making them too warm. I think probably the best way, not only for the wool, but for the healthy condition of the sheep, would be to have them in good quarters, where they can have access in and out at will for water and grass in addition to what you supply.

J. L. Thompson, Grant County. We should give sheep exercise; it has much to do with the kind of wool we grow as well as quality. I do not think housing hurts the fleece as much as lack of exercise. We furnish our sheep good quarters; if you want a good clip give them exercise, no matter what kind of weather. We have not shut our doors twice this winter. Exercise makes better fleeces.

Dr. N. D. Gaddy. If you give them a chance to go in and out they get water, grass and exercise, all of which are conducive to the healthy physiological functions of the sheep. I think apart from this exercise has a bad effect on the fiber. I have tried that enough to convince me that the wool is not so good and sheep are not so healthy when deprived of this exercise.

George C. Thompson, of Southport, Ind., read the following paper on—

THE MOST PROFITABLE TYPE OF SHEEP FOR THE FARMERS OF INDIANA.

In the topic assigned me I find I am expected to discuss types rather than breeds, and I shall not refer to any of the so-called pure breeds, except by way of illustration and comparison. The profit in handling any kind of live stock is controlled to a considerable degree by certain conditions of climate, topography, food supply, etc., also by the care or lack of care given. The profits also depend largely upon market facilities and in the case of sheep upon the supply, and demand for certain grades of wool and the proximity of good markets for mutton and spring lambs.

Let us first consider some of the conditions as they exist in Indiana. A great many hard things have been said of the climate of our State, part of which may be true and a great deal of it untrue, but I think it will not be denied that we have some extreme changes. From a balmy spring like air to a zero temperature is not an uncommon change for twenty-four hours, and warm rains are frequently followed by sleet and freezing weather, and these must be taken into consideration in answering the question.

The food supply for sheep is of the best. Our blue grass is not excelled for summer pasture, our clover, timothy hay and corn fodder, are of the best for winter rough feed, and the fact that we this year produced 130,000,000 bushels of corn and 26,000,000 bushels of oats would indicate that there is little danger of a grain famine. In the matter of care I can not speak so favorably, as many farmers act on the system of "root hog or die," and turn their flocks out on the commons to make their own living for a great part of the year. You may say this is not a necessary condition and should be changed, if you will allow me to crack a chestnut "it is a condition, and not a theory, we are discussing."

What about our market facilities with a city of 125,000 in the center of our State, a large number of flourishing manufacturing cities and towns within her border. The large cities of Chicago, Louisville and Cincinnati just across the line. Our State checkered by railroads, which radiate from our Capital City like the spokes of a wheel. Trunk lines crossing the State in every quarter from east to west. The markets of the world are at our doors.

What have we to sell? Wool, mutton and lambs, and from the difference in the cost of production and the selling price, comes the profit or loss. And the conditions to which I have referred, are large factors in determining which it shall be. There are also other conditions which enter largely into the question of profit or loss.

The grade of wool in greatest demand by our manufacturers, and the competition of foreign wools, determined largely by the solution of that other question

which still remains to vex the politicians and statesmen—the tariff. Also in the article of mutton, the quality and weight of carcass determines the price at which it may be sold, the prolificness of ewes, their suckling qualities and the early maturity of lambs are qualities which we may not ignore when looking for the most profitable type of sheep. There are other conditions, but for our purpose these are enough.

Let us then consider some of the well-known types of sheep in connection with these conditions.

Beginning with the long wool breeds, we have a sheep of large and rather coarse frame, which, when well fattened brings a fair price in market, yet they are more difficult to keep in good condition than some of the other breeds. Their wool being long and coarse, takes water easily, and, unless provided with good shelter and the best of care, their constitutions become impaired, the flock becomes unhealthy and the balance is on the wrong side of the ledger; while the fleeces are of good weight the wool is too coarse to bring the best price in market.

With good care, about one lamb to the ewe may be counted on as a rule. While there will be occasional twins, casualties may fairly be expected to reduce the number to about the proportion mentioned. The lambs while growing rapidly do not fatten readily and can not easily be kept in good condition for the butcher so as to take advantage of early spring prices.

Take another type—those known as middle-wool or mutton breeds—the best known representative of which is the Southdown. In this type the mutton qualities have received the most attention, and in this respect little more is to be desired, and yet as a general purpose sheep, and that is what we want, they have some defects. While the wool is of good quality and brings a fair price, the fleece is not of sufficient weight to make them the most desirable to the average farmer. They are of good constitution, prolific and the lambs can be put into market at almost any age. The ewes will raise a larger proportion of twin lambs than any other of the types we may consider.

There yet remains another well-known type—the Merinos—which is celebrated chiefly for the quality of their wool and their ability to take care of themselves under unfavorable conditions, the compactness of their fleece affording good protection from storms and cold. Large numbers of them can be kept together, and they will not be so unfavorably affected by it as would the other classes mentioned, but as a mutton sheep they are not highly esteemed, and a given number will raise fewer lambs than any of those I have referred to.

Neither of these classes produce the grade of wool most in demand by our American manufacturers—the long wool is too coarse, the staple of middle wool is too short, and the class of goods into which the Merino enters is not largely manufactured in this country. It must meet with stronger competition from foreign wools than any of the other grades. Considering all the conditions and the characteristics of the several classes or types of sheep referred to, we are forced to the conclusion that none of them meet the conditions fully, and that we must look elsewhere for the most profitable type of sheep for the farmers of Indiana.

An ideal sheep for this purpose would be one which would produce a fleece with length of staple of the long wool breeds, modified in quality by a dash of

Merino blood—a carcass having the mutton qualities of the “Downs”—prolific mothers, lambs maturing early and easily kept in condition for the butcher. You may say that this is only an ideal, and no breed will fill the conditions; that it would be a mongrel, and you gentlemen who take pride in the purity of blood of your pet flocks, are shocked at the suggestion, and yet I believe such a sheep would put more money into the pockets of the farmers of Indiana than either of the types I have mentioned. Of course we leave out of the question those persons who make a specialty of raising pure blooded sheep to sell to their neighbors at fancy prices for breeders, and to exhibit at fairs to the wondering multitudes who can never make their sheep look quite so well as those they see there.

Their's is a useful and necessary business, but they are only one in a thousand, and if we should all become breeders of pure bloods their occupation would be gone.

The great mass of common farmers must be satisfied with something which will bring them fair returns for the attention which is given, and I believe a type of sheep produced as has been suggested would come nearer meeting all the conditions than any of the pure breeds, as we now have them.

DISCUSSION.

I. N. Cotton. I had hoped the gentleman would have gone a little farther and told what crosses would make this ideal sheep.

G. C. Thompson. I would be glad to hear something on that subject myself.

Mr. Mitchell. It is like a novel—it stops when it gets to the most interesting part.

Calvin Cowgill, Wabash County. This question, sir, is one that I have been trying to solve for the last quarter of a century, that is, to know what kind of sheep would be most profitable for me to have. I am satisfied, sir, that the mongrel sheep, one that is crossed between some of the mutton grades and the Merino sheep, is the most profitable the farmer can have, if we can manage to keep it in the condition we want it. [Laughter.]. I am of the opinion that there is no sheep that is quite so profitable for the common farmer as the one that has much Merino blood, taking into consideration the hardihood of the animal, the quality and amount of wool produced. I believe, but am not absolutely certain that I am right, that the cross between what we call in this country the American Merino and the Shropshire sheep, will come nearer filling the bill than any other kind of sheep. I have not tried them enough to tell whether we can maintain such a cross by breeding two kinds together; I have serious doubts about that; but I think with proper breeding and care you may establish a grade that can be maintained with that kind of a cross. As profitable sheep as ever I have had were a cross between Cotswold and Merino, that is, the first cross, but never could do anything with it after the second cross. The farmer wants to raise sheep that will make good mutton sheep, and at the same time produce a good fleece of marketable wool. If any of you can tell us (as my friend here on my right stopped before he disclosed how we could get at that kind of sheep); if any one can solve that question, I would be glad to have them do so. I think we can come nearer to that point by crossing

the American Merino with the Shropshire. If you breed a Shropshire ewe to a Merino buck you get the mark of Merino blood more than the other way. I repeat, sir, that there is no sheep that is profitable for the common farmer unless it has a good quality of Merino blood in it.

Will White, Johnson County. The Merino crossed with the Cotswold is the best sheep we have. It tightens up the wool on the back and the rain don't hurt it. It don't part like the Cotswold, but is less open and protected. I have seen the backbone of sheep exposed by the parting of the wool. We should tighten this up by crossing with the Merino.

J. B. Herkless. Too many of our breeders breed after the ram and have no ideal name they aim to breed. They keep on breeding in that line and don't know just what they do want. This is a great failure of the American people. If we had more Bakewells we would have better sheep.

T. C. Phelps, Decatur County. I believe every one of the speakers on the floor, with the exception of Mr. Herkless, argue that the mongrel is better than the thoroughbred for the common farmer. The agricultural papers have been telling us for years that improved stock was better than mongrels. Too many crosses, I think, is not for the best.

J. W. Robe, Putnam County. Some think there is difficulty in staying with these mongrels. I raised Cotswolds until I had built up my sheep, and then took a Merino and crossed. While I had Cotswolds I lost many lambs, in fact did not raise more than one lamb to the ewe; but since crossing with the Merino I do better. I have never had a cross as good. I am breeding these Merino ewes to Shropshire bucks. I don't want to change my Merino ewes, but sell my lambs. If I want to increase my flock I keep ewe lambs. It has tightened the wool up materially. I lost considerably of Cotswold, but since I have Merino ewes I have lost scarcely any. I do not give special shelter to my flock. I am well pleased with my present breed.

Mr. Thompson. What does the gentleman do when these ewes wear out?

Mr. Robe. That is not a hard question to answer. To maintain that standard if I want to keep up the breed of these same ewes, I can put full blood Merinos on the new flock.

Mr. Privett. In cross-breeding some lambs will breed nearer the type than others. Some will take the type of the ewe while others will follow after the buck. By this he can select lambs and keep up the flock.

Mr. Phelps. I do not know how he can maintain the type while he is breeding Merino, Shropshire and Cotswold different years. I believe in staying with the thoroughbreds.

Mr. Beeler. I have tried crosses between all three of the breeds and had nice sheep.

Mortimer Levering, of Lafayette, read the following paper on

VALUE OF PEDIGREES TO THE BREEDER OF PURE BRED SHEEP.

The subject given me may be practically divided under three heads. First—What constitutes a pedigree. Second—Its advantages to breeders in general. Third—Its value to sheep breeders.

The word "Pedigree," as you are aware, is derived from the French words, "Par Degres," meaning "By Degrees," or "Step by Step," the record of a line of ancestry: a genealogical table of antecedents.

The value of a pedigree primarily depends upon the character of the ancestry, and secondarily, upon the correctness, consecutiveness and authenticity of the record.

Pedigrees should always be kept in books, or upon manuscripts, for they are often received with doubt when given from memory. Care should be exercised in making each pedigree show an unbroken line of descent down to the animal in question. If any link is missing in the ancestral chain, the value of the pedigree is at once depreciated and a doubt arises as to the reliability of the whole. The advantage of pedigrees to breeders of any kind of stock is inestimable. The writer of this paper believes implicitly in hereditary tendencies and characteristics, for the influence transmitted by progenitors upon their offspring is so universally admitted as to leave but very few sceptical of its results. Hence, no animal is of unusual merit or distinction without deriving the quality from some meritorious ancestor, be they closely or remotely related. Some arguments in defence of this may be shown by citing examples of the practice of these so-called "sceptics." Visit any one of them, while he says "every man is the architect of his own fortune," and "good shelter," and the "corn crib," are the best parents for live stock, yet if any one of his own or his wife's ancestors came over in the May Flower, or were distinguished in the Revolutionary War, he will trace back the relationship in detail and with great pride. Then visit his stock. He will show you a horse that he asserts is "by Old Messenger" or "Hambletonian," though the former has been dead over eighty years and the latter more than a score. He will show you a red cow and claim that she is nearly a full blooded Shorthorn, "Bates'-topped" perhaps. His white pigs are "Chester Whites," maybe "Todd's Improved," and his sheep, of these he speaks with enthusiasm; they are "High Grades," as good as "Full Bloods." The stock originally came from the neighborhood where lived a man who bought a ram at the "Fair." Now, as a matter of fact, none of these claims may be just, and can not be substantiated by the proper papers, he having no authenticated pedigrees to show for any of them. Then why does he make such statements? Surely he does not intend to tell a deliberate falsehood or intentionally deceive his visitor. It is done for "revenue only." He imagines that these animals bear distinctive resemblances to the stock he has named, and he takes satisfaction in thinking they may be accidentally related to some such illustrious families, and if he can induce a prospective buyer to see these things too, he may sell the stock for a much higher price. For, after all, there is much in a name, even among domestic animals. This is forcibly illustrated from the fact that there are several thousand horses and cattle recorded with combinations of the

names, "Wilkes" and "Airdrie," and other illustrious sires or dams. For every one believes that if stock is so related the horse may trot fast, the steer grow fat on less feed, the hog have a better form, the sheep be larger and finer, for having a trace of such good blood in their veins.

The value of a pedigree to the sheep breeder is alike an advantage to the one who buys, the one who owns, and to the sheep itself. Taking these in their order.

When a breeder contemplates buying a ram to improve his flock, as should be the aim of every sheep raiser, he goes to a breeder who pays strict attention to the breeding of that particular kind of sheep he intends to buy. If he sees an animal that pleases him he asks, "how is it bred?" Then if a pedigree can be shown that gives as the sire and dam—animals well known as prize winners, or from prize stock—he is satisfied to pay a big price.

Those who own sheep and have stock for sale will find that registered stock can be sold for nearly three times the price of grades. It is a well-known fact that no matter what a breeder may say regarding the quality or individual merit of his flock, or the statement that "they are full blood but can not be recorded as no pedigrees have been kept of the different animals," he cannot sell them for half the price that he could if they were recorded. The average price of pure-bred sheep without pedigrees entitling them to registry is \$8, and the average price of registered sheep is \$35. The one kind of sheep eat just as much as the other and take about the same amount of time to handle. Then it is certainly a great advantage to the breeder to be able to record his flock by having a reliable pedigree for each sheep.*

Pedigreed sheep undoubtedly get better care than their common relations, and fare relatively better, as their pedigrees show that they can boast of superb lineage. From the time a pedigreed lamb is dropped its extra care is marked. If the shepherd has a choice pedigreed breeding ewe, he will ascertain to a day when she will lamb, and if the weather is cold and stormy that lamb will never be left on the frozen ground, but will likely be wrapped in an overcoat and warmed near a fire, no matter what time of night it may make its debut on that farm. From that hour it is watched, fed and especially cared for. Hundreds of such lambs, when kept for show or breeding purposes, are not permitted to get a drop of rain or snow on their fleece.

Then again in mating care is taken when breeding pedigreed animals to avoid too close inbreeding, and to use such sires as have well established records as good individuals or prize winners, or a breeder takes pride in publishing to the world through the medium of the record that his stock is as good as he can afford to buy.

Then it is important that every sheep breeder keep an accurate record of his flock that he may satisfy the inquiries of buyers, establish his representations as to pedigrees, improve his flock by getting meritorious stock, and give such sheep the care that well-bred animals deserve, to the end that his profits may be largely increased, his pleasure in raising stock be assured, and have the satisfaction it will give to be classed as "a breeder of pure bred sheep."

DISCUSSION.

Robert Mitchell, Gibson County. We should encourage pure bred stock. I am not in favor of cross-breeding, because you have no stopping point. There are enough of types already produced to meet the wants of the common farmer. If you want a sheep for a good mutton market we have the Southdown and the Shropshiredown, which is a good family. If you want a larger sheep you have the Oxforddown—I never fancied the Hampshiredown. Talk about crossing sheep, there are so many crosses already it is useless to spend time in establishing other types of sheep. Sheep breeders generally should see it is to their advantage to keep within the established types, for they will reproduce themselves.

J. L. Thompson. I am interested in pure bred sheep and good pedigrees, and I can indorse generally what Mr. Levering has said in his paper, but must disagree with a few remarks made. As far as breeders who are breeding pure bred sheep, which is exactly the thing to do, are concerned, I agree with him, but every one in the country can not do this unless it is in the case of Merinos. If we throw out here the idea that every one should have thoroughbred sheep we drive out the interest, yet we should encourage as far as practicable. My friend across the way is near the truth. His Merino foundation is about the thing, and by following that up we will get a sheep the common farmer can use. If you say to the common farmer, "Let the Merino alone, and use Shropshire or Cotswold," he will let *them* alone nine times out of ten; but give him a pure bred male all the time and you can induce him to continue in the business and have a business established that will be satisfactory to him, and in the end he will be able to handle pure breeds.

Mr. Mitchell. Do you mean scrub when you say cross?

J. L. Thompson. I commenced breeding Cotswold rams on Merino ewes and was well pleased. It occurred to me to try Shropshire on that. I thought I would establish a breed and continue with the Shropshire a cross or two. I sold several lambs of that grade that proved satisfactory over the county generally, but I soon noticed that when one of these got with my ewes I went back to where I started. This discouraged me, and I never breed grade rams as good as ewes of equal blood but what I go back. But I continue using Shropshire rams with grade ewes. In twelve or thirteen years I have established a breed of sheep that are good. I get satisfactory fleeces and good carcasses. If I tell a man he must quit the business or buy Shropshire at from \$30 to \$40 apiece he will quit the business. After a while in Indiana I think we will breed pure bred sheep of the different breeds. The people of the West are looking to us and reading reports of these meetings, and know what we are doing, and if we give poor teaching they will go on the same way they have in the past. I do not think they can be raised in as large flocks here as on the plains.

Mr. Mitchell. The point I want to get at is, if a man has a nice flock of ewes, is it not unnecessary for him to buy an imported buck, but necessary for him to select a good type and keep on improving that type and produce a foundation as good afterwhile without near the cost. At the close of the war I had long wool

sheep, I wanted to change to the Shropshire, and by a systematic change of breeding I have a nice flock of sheep from the Cotswold. We can produce first-class sheep all over Indiana. Take a good buck that suits your fancy, and the result will be good.

J. L. Thompson. That is just what I teach. That is in the reach of the common farmer. The breeders will take care of themselves.

Mr. Mitchell. I hardly think it necessary to breed twenty-five or thirty years for a type.

Mr. Thompson. I don't believe in what Mr. Robe said, we should breed right along. You don't need to go twenty-five years, three or four crosses will make a good type.

Calvin Cowgill, Wabash County. Is it not possible to establish a type that will be almost entirely similar to a cross between full blood Shropshire and full blood Southdown or Cotswold and Merino by care in selecting the offspring from year to year? And just what you get from the first cross between two full blood sheep. Look at the sheep all through the country, you don't see any full blood sheep without it is some of those breeders who have taken pains to keep up the type. You see mongrel sheep all through the country, and they breed in that way, and they keep up that kind of crosses through the country. I think it is possible to establish that kind of cross or type through crossing, and with little pains that are equally prominent and reliable. I do not absolutely know it to be so, but think it possible.

J. L. Thompson, Grant County. I think I am well enough informed on the English breeders to know a little something about this matter. While in England some years ago I made inquiry on this subject, and I am certain about all of them established breeds on the plan the gentleman has outlined. They originally had a fair sheep of the Shropshire breed. They commenced by selecting and weeding out until they got them as they are to-day, and they still kept it up. Nine out of ten are weeded out to-day. It is the same way with the Southdown and every other breed, even to the cattle, but I doubt the propriety of undertaking to establish a breed as so many disappointments come up and so many will have to be weeded out. We have good breeds of sheep here, but take them through the course I have outlined and we will have better sheep. The gentleman says he has bred for twenty-five years and is not satisfied, others will breed twenty-five years longer and still not be satisfied.

Mr. Cotton. If I understand Mr. Thompson he maintains any type he wishes. Mr. Dungan may have the Shropshire, and, also, Mr. Thompson, but each have a different type of the same breed. Mr. Thompson's idea is this; if his Shropshire sheep don't suit for him, he can breed to different bucks and regulate the grade. Is that it?

Mr. Thompson. I don't believe in dividing the Shropshire in types.

Mr. Cotton. Is it not there now?

Mr. Thompson. Too much so.

Mr. Cotton. The best type held in your locality may not be the best for me. I am living close to the city and run my lambs to the market and you don't. I say here that one of our largest profits is from our lambs at high prices.

Mr. Thompson. I find, with us living away from market, that the wool is most profitable.

Mr. Collm. I look at the carcass and you at the wool, which requires a different type of sheep.

G. C. Thompson, Southport. Let us confine ourselves to pure bred sheep although none of those pure breeds may meet the conditions in every particular as they should now.

The Chair appointed Messrs. J. W. Robe, T. C. Phelps and C. Cowgill a committee on programme.

Mr. Darnell offered the following resolution, which was adopted:

Resolved, That this association recommend to the Indiana State Board of Agriculture, and all County and District Fair Associations, that two separate classifications of sheep be adopted in their premium list, one for home-bred and the other for imported sheep.

Pending its adoption, the following discussion ensued.:

Mr. Cal. Darnell, Indianapolis. The reason I have introduced this resolution, I have had considerable experience in attending various fairs in the State; most every place I find imported sheep taking all the premiums and the farmers have become disgusted. These men have sheep that fill every ring and generally take every prize. The people in this country don't get sheep up as in the East and in Canada. When I imported sheep from Canada I generally looked at the premium list first and selected sheep to fill every ring and took many prizes. While our men at home work hard to secure some of the prizes they are defeated. They are not able and can not afford to take sheep to the fair and back home again without compensation. As our president said, "visit our fairs and you will find that two-thirds of the sheep there are imported."

Mr. Mitchell. I want to encourage home breeders, but the difficulty in adopting this resolution is, if you make a specialty of sheep, the breeders class and importers class you will swamp, it will be the same in cattle and horses, and there will be no stopping place.

Mr. White. I am heartily in favor of this resolution. We can not compete with England and Canada. It is the intention of county fairs to encourage people to breed better stock at home, and by having this division we can do this, but if we compete with foreign breeders, we will not be a success in improved farm stock.

J. Strange, Grant Co. I had the pleasure once of interviewing a couple of English gentlemen. In the course of that interview they said that we in America put on better bone than they could in England. If that be a fact, why can't we make as fine sheep in America as any where. Our agricultural associations are benevolent institutions, but owing to our financial condition it might not be best to put two classes in the premium list for all kinds of stock. The burden will be too great on the societies, yet I am in favor of encouraging home breeding. When they admit that we put on finer bone in America than they can in England, we can raise as fine sheep. If we come out in the showing to compete with the world, we should try to beat everything that exists, not only in our country but in foreign countries.

Fielding Beeler, Indianapolis. If the gentleman attends the State Fair as much as I have, he will see the difficulty of dividing the premiums as proposed in the resolution. There is more effort now in raising sheep superior in quality that have been handled by men who are experts in the business than formerly. The feeding, trimming, exhibiting and talking up of stock is spreading. They now understand how to talk up all the fine points of the animal. I believe there is a better chance for deception in sheep than any other kind of stock that comes on the fair grounds. Mr. Darnell has had experience as an exhibitor, and has passed as expert on sheep at other fairs. I believe the President and my friend, Mr. Cotton, will bear me out in what I have said. It is the duty of the State Board of Agriculture to so divide the premium list as to give encouragement to small farmers as well as large. I am heartily in favor of the resolution, and not only for sheep, but all other kinds of stock. How are we to encourage the breeding of stock unless we do something of this kind?

Mr. Mitchell. I am not opposed to this exhibit, but the point for the fair managers to discuss is whether the professional exhibitor is an advantage or disadvantage. Those men who are exhibitors become professional men, these are the ones who drive the farmer out. If the Board was able to do something it would be all right. Is there any fair association able to do this? If you make this list you will have to cut the amount of premiums down.

Mr. Beeler. Those who have been importing sheep should have great credit, but I want to see small farmers encouraged.

J. L. Thompson. If this classification can be given to us separate we would be glad to have it, but I do not think it is practical, and no State Board or county fair is able to do it. We should look at this question squarely, and see whether the sheep industry has been helped or hindered. It is going forward all the time. If you make this separation you may give the professional two chances, he may set his stakes to breed for either class. He knows how to manipulate matters and turn where the others do not know the ropes.

Mr. Mitchell. I voice the sentiment of the State Board when I say that the Board desires to carry out the wishes of this association.

I. N. Cotton read the following paper on :

SHEEP HUSBANDRY AND ITS RELATION TO OUR WANTS.

I might start by giving the zoölogy of the sheep, as regards its structure, habits, classification and habitations, but I shall leave that to those who are inclined to look after the scientific part, and turn my attention to the practical side of the question.

When man appeared on this earth his first thought seems to have been of something to eat, and the next thought of something to wear; those two thoughts seem to involve the primary wants of man. His first food seems to have been the fruit of the garden, and his first clothes the leaves of the trees. But the sheep soon jumped into his pasture, and have been closely allied to man ever since. Probably first used as food and next as clothing; using the carcass as food and the

skin and wool as clothing, but we will leave the ancients in their glory, or nude state as you may choose to call it, and come down to the present day, for though the past has its uses, it is a poor place for a man to live, for he who lays down to sleep or follows the customs of the fathers soon finds himself left behind in the race of the nineteenth century.

The sheep has followed man wherever he has built his habitation, and has become an element of his support, and to-day within the United States, with all our varied soils, from alluvial valleys to high table lands, with all the varied climate of the inhabited part of the Globe (except the extreme tropical) the sheep may exist and flourish. I doubt if there is a county, yes, even a township in the United States where sheep will not be found therein and raised with profit.

It may be more universally raised, especially in the United States, than any other domestic animal. And with proper protection for the carcass within, and the fleece without, we should supply every thread of wool consumed by the citizens of the United States, giving employment to the agriculturist wherever he may choose his habitation, and whether they graze in the valley, on the hill side, or mountain top, they leave the soil in a better condition than it was when they entered upon it; and that is one of the relations of sheep husbandry to the wants of man—the bettering of the soil. For the day is fast approaching when our virgin soil will all be occupied by the pioneer, for you have only to turn your ear to the West to hear the clamor for Oklahoma, and when the wheat has consumed the virgin soil of the Red River valley, and eaten up the chemical elements that compose wheat, for time will do it. Then the agriculturist will have to look in some other direction for his livelihood.

Who knows but what the sheep will then dot the plains as thickly as the wheat sheaves do to-day, for the sheep is the scavenger of the farm, and turns his food, whatever it may be, into the best of manure. And the sooner the country is rid of the scalawag and replaced by the fine-wooled Merino, the long-wooled Cotswold, pretty little Southdown, and the broad-backed Shropshire, the better will be the relations of sheep husbandry to the wants of man.

In showing up the sheep and its relations to man, I shall give you a few figures, for whether in raising, shearing, picking, spinning, weaving or tailoring wherein it gives employment to man has a relation to man's wants.

From the best estimate that I can get the inhabitants of the United States consume 600,000,000 pounds of wool annually. Estimating our population at 60,000,000 it would give 10 pounds to each inhabitant, and of this amount we produce about one-half, or 300,000,000 pounds, worth \$100,000,000. In 1887 we imported 114,000,000 pounds, leaving 186,000,000 pounds to be imported in clothing and other woollen materials to make up the amount consumed. On our estimate of \$100,000,000 worth of wool we can add \$25,000,000 worth of mutton, giving us annually \$125,000,000 as the proceeds from the sheep direct. And here we have a relation of the sheep to man's wants, in the converting of grain and grass into dollars and cents.

The next relation of this 300,000,000 pounds of wool is the buying, storing and shipping to the manufactories. Now let us look into these factories and see what they are doing. Over 2,000 woollen factories in the United States, with a

capital of \$100,000,000, employing 100,000 men, women and children, with annual wages of \$30,000,000, consuming 400,000,000 pounds of raw wool and turning out \$200,000,000 worth of manufactured goods. And again we have about 100 worsted mills with a capital of \$25,000,000, employing 20,000 men, women and children. Here I might refer to the labor of thousands engaged in the manufacture of the machinery, and to the miner who digs the coal, and to the railroad that hauls the coal that makes the steam that drives the machinery, but I become lost in the multiplicity of this labor. And yet we have not enumerated the knitting, hosiery, tailoring and dressmaking establishments, and we shall not stop to give figures, but will you take a thought of our 60,000,000 people and the proportion of wool in their clothing. Let us look into the clothing manufactories, at the numerous cutting and sewing tailors, besides the millions of garments sent out to private families which the census taker can not reach. But if you want to grasp the magnitude of tailoring of this country turn your eyes to the masses and behold with what they are clothed, and then commence to enumerate the woollen pants, coats and vests, and try to enumerate the innumerable stitches that it took to make them, and your brain will grow dizzy and your head swim, and after you have steadied your brain with a little chloral, turn to the women of this country and behold their raiment of worsted and woollen, for there is none so well clothed as the ladies of this country. We might as well view them from a distance, for you have not been in their dress shops much, unless your wife got in a hurry to show you her fine all-wool merino before it was quite finished. So we will stand at a distance and view them with their worsted hose, all-wool dresses, and merino shawls about the shoulders. We spoke of innumerable stitches in men's clothing, but the word innumerable in women's clothing will not cover the thought. You might as well undertake to count the leaves on the tree, or the sands on the seashore, as to enumerate the stitches in women's dress. Think of the dressmaking shops in this country, and look into every private family and you will find a dressmaker there, and then tell me what relation sheep husbandry has to our wants.

Now let us compare the sheep with our other domestic animals, not that we wish to depreciate them, but that we may get their relation as to the wants of man.

The young colt wanders in the pasture until he is three years old, and then spends the remainder of his life in the field and on the road. Our cattle disappear from our pastures at an average of three years, never to be heard from again. The poor hog! he disappears in from six to nine months only to be remembered by the dyspepsia caused by eating fat pork. But the sheep! how we like to dwell at the table with our lamb chops. No dyspepsia there. You have seen the white fleece as it rolled from the sheep by the clip of the shears, and you have seen it as it passed through the cards and was drawn into long threads by the spindle, and passed through the loom, colored, pulled, sheared and laid on the salesman's table. And you have seen it taken from the salesman's table to the manufactory, and from the manufactory to the retail dealer, and from there scattered to the four winds of the earth, by whomsoever may choose to wear it. And when we look down through the long vicissitudes which it passed before it reached its final destiny, in the rag carpet on the farmer's floor, may we not exclaim, Great is the relation of sheep husbandry to our wants?

"WHAT SHOULD BE THE QUALIFICATIONS OF AN EXPERT JUDGE ON SHEEP,"

Was the subject assigned to Hon. Robert Mitchell, of Princeton. Mr. Mitchell not having prepared a paper, spoke as follows:

The expert system of judging stock has only been in use with us one year, and as I have had so little experience will give my observations while acting as one of the Superintendents at the late State fair. The qualification of a man necessary to perform expert duty is, first, he must be honest. There are two classes of experts qualified for judging stock at fairs. One is the man who is in the habit of raising stock. He is an expert breeder because he demonstrates this by being an exhibitor. He knows the general make up and quality of his animals. Another class is the exhibitor expert, who goes out into the world and buys stock and brings it in to the show. He has practice in his eye; he has the ability within himself to select that which will win. These are the only two classes of men competent to become judges. The butcher is considered an expert on mutton. I don't think the butcher is altogether the best judge, for this reason: He judges the animal from the standpoint of a butcher, and gives the award to the animal that gives the best returns in money at the block, and not unfrequently the breeder's choice is left out by the award of the butcher. We should give a just award so the feeder and breeder may get good returns for the feed consumed in the production of meat, whether mutton, pork or beef. The butcher is too apt to judge from his own standpoint, and his decision is not altogether satisfactory. A judge in the show ring should not have friends, should have a character above reproach, and when the award is passed it should command respect. This is my experience of the expert system. I am insisting and anxious to see it tried a few years longer. I have frequently observed in the show ring, where we have had three judges, that some were not quite satisfied with the decision rendered, and the tendency was to shift the blame to other members of the committee, but when you have an expert there is no dodging. If he makes a mistake he is the one to blame. A man who is serving as an expert and passing his judgment on stock, has to do it without fear of any man. These are the kind of men we must select for this purpose.

J. B. Herkless, Henry County. I am well pleased with the remarks of Mr. Mitchell, as regards the man's honesty. I have no one to favor. We showed at some eight different fairs last season and all except one adopted the one judge system, and our exhibits were satisfactory. We had more dissatisfaction with three judges than with one. We should endeavor to educate men to the expert system. We have been talking a plan up to bring about this expert system everywhere. A suggestion has been made that we might hold a shearing here and send a man out to pass on sheep, and ask him questions after he comes back as to why he gave such an animal the premium. We need competent men.

T. C. Phelps. I have been an exhibitor for many years, and from my experience I think the one judge system is best. I am sorry Mr. Mitchell has not prepared a paper, but he has pretty well covered the ground, and I heartily endorse the recommendations made by him.

J. L. Thompson, Grant County. By experts, of course, we mean a class of men who are competent to judge stock, and we have not many of them, but we will have to use what we have. The point is, we should establish a type and know what type or class of animals to show successfully which will be the means of leading us on in the right direction. When we depend on a picked-up committee we judge from one idea here and another there. The animal may win here in Indiana but not in Illinois. But when we have an expert judge he will establish a type of the different classes of animals. Frequently each member of these picked-up committees has a type of his own, and it don't work satisfactory. Last season I showed at Columbus, the committee had no idea about properly awarding premiums. Here we had the expert system, which worked nicely. Illinois had a picked-up committee which was not altogether satisfactory. As far as I know the expert system has given satisfaction where tried. By this we know what kind of sheep will win, and if we show again we know what kind to take; but who knows what kind of animals judged by a picked-up committee to breed for winners.

Mr. Mitchell. The breeders last year named men to go out as experts who were not altogether satisfactory. You sometimes name men who are strangers, you do not know their reputation for truth and veracity, nor whether some of these men would not be controlled by exhibitors. We should understand their record. Every man before going out as an expert should have a certificate of good standing from where he lives. If I were asked to go out to judge stock, and should be asked for such a certificate I would not feel hurt at all. It is just that we should require such a certificate. Whenever the sheep breeders want experts be sure to get men that you will be satisfied with. There has been trouble sometimes by not selecting trustworthy men.

J. B. Herkless. There has not been any difficulty of this kind among the sheep breeders. We stand by any man that our Association recommends. I believe it would be well before we adjourn to take some measures to revise our premium list, as also this matter of judging. We want it uniform all over the country in both county and State fairs.

Mr. Thompson. We have competent experts in our Association, but lack education. Who will educate them? I would say we can, if we could have sheep-shearing at some central point and let them try their skill at judging here. I think the score card is a failure. Sometimes the best experts in the country make mistakes, but we might have somebody at this shearing that would teach us something that would be of great value to us.

S. W. Dungan, Johnson County. I think Mr. Herkless made a good suggestion as to the revision of the premium list and experts. Perhaps you had best put it in the form of a motion.

Mr. Mitchell. Do you know of any good judges who have given good satisfaction, that could be induced to come to this shearing as instructors and teach those who aspire to become judges what they should know? We have men of that kind.

S. W. Dungan. Why could not this be done during the State Fair?

Mr. Mitchell. It is too busy a time then.

Mr. Dungan. It occurs to me it would be less expense then than at any other time.

Mr. Thompson. We want men to do this work so those looking on would feel they were doing right. People make mistakes sometimes which are amusing to us, but not so much so when the ribbon goes to some one else. [Laughter]. I notice committees and experts spend too much time on inferior animals that don't need a moment's consideration. When my animals are inferior I want to get them into the pen as quickly as possible.

Mr. Phelps. I think myself we spend too much time on sheep that are inferior, but still we should use courtesy in this matter. If there are a dozen in a row and two or three of them are close, they should be brought together and compared and not spend too much time on those that are inferior.

Messrs. J. B. Herkless, J. R. Tomlinson, Fielding Beeler, J. L. Thompson and T. C. Phelps were appointed a committee to revise the list of experts.

DISCUSSION OF LIVE STOCK SANITARY COMMISSION.

J. Strange, Grant County. As we have no live stock sanitary commission it would be in the province of these three associations to look after that matter. I would suggest that three persons be appointed by this Association to confer with similar committees of the Shorthorn and Swine Breeders' Associations, to wait on the Legislature in the interest of a live stock sanitary commission.

Mr. Mitchell. It is not necessary. Two years ago Judge Buckles tried to get a bill of that kind through the Legislature, but failed by the "dead lock" coming on. It has now been taken up, passed to the second reading and engrossed, and you can't do anything with it after it is engrossed. It is changed a little in a few places, which I regret. The appointments are left in the hands of the Legislature. This should have been either in the hands of the Governor or State Board of Agriculture, but it is now in the hands of the Legislature, and it is better than nothing. If you go to amending this bill you will have trouble. There will be three or four hundred bills before that body, and it will in the rush be thrown aside. While it is not just what we want, it is better than no bill at all.

J. W. Robe. Unless a recommendation from this association would have a wholesome influence towards the passage of this bill we had best do nothing.

J. Strange. There might be other matters in connection with it, such as the meat trade and adulteration of food, if nothing of that kind has been done. Sometimes there is dressed meat shipped in here that has flies in it. This should be remedied. We should have some kind of a commission in our State to inspect meat. It is the logic of the American people to build up home trade. Meat is shipped here from the west, and we don't know wether it is wholesome or not. If you investigate this you will see that a large amount of this comes from Armour's packing house at Chicago. They are crowding out the inferior article and shipping it to outside points. I believe a legislative committee of three from each of these associations to look after interests of this kind would be beneficial.

Mr. Mitchell. If we must have a committee, let us have three from this association and three from the Shorthorn Breeders; the Swine Breeders are trying to work up a bill of their own.

Mr. Strange. If there is a general sanitary bill, there is no need of the Swine Breeders' bill. This Live Stock Sanitary Bill should cover everything.

Mr. Cowgill. I do not know that I fully understand the question before the meeting. Do I understand that it is to appoint a committee by this association to look after the sanitary interests of all stock or sheep only?

J. Strange. The general stock industries.

Mr. Mitchell. We had better let this matter alone. There are some as practical farmers in the legislature as we are, and we had better let them alone with it. If we can do anything privately, well and good, but let us not appoint a committee.

I. N. Cotton, Marion County. I can not see but what this committee will do good if it is to look after legislation that will be beneficial to the industrial associations.

Mr. Mitchell. Would it not be as well for each one to consider himself a committee of one and speak to the legislators and let your wants be known.

Mr. Cotton. No, sir; what is everybody's business is nobody's business. I am in favor of appointing a committee.

Mr. Strange. Gentlemen of the Legislature have said to me, "Let us know what you want and we will try and work in your interest."

Mr. Hamilton, Decatur County. I have been interviewing members of the Legislature to-day, and I have been informed that to-night they have a meeting to draft a bill to meet this very case, that all animals slaughtered shall be inspected on foot. It is important that this association should appoint a committee to meet with them, and tell them what we want, and the Shorthorn men should do the same.

Mr. Mitchell. How in the world are you going to have this meat inspected? Is every town throughout the country to have an inspector?

Mr. Hamilton. Every town of 1,500 inhabitants shall have an inspector appointed by the County Commissioners or Judge of the court.

Mr. Mitchell. There can not be as many inspectors as butchers and in the little towns you will drive these out. If you undertake this, you will get in deep water.

Messrs. J. Strange, I. N. Cotton and Calvin Cowgill were appointed a committee of conference on legislation.

On motion of Robert Mitchell the convention adjourned until 8.30 A. M.

THURSDAY, January 24, 1889.

The convention met pursuant to adjournment with President Dungan in the chair.

Mr. Mitchell from the committee on resolutions presented the following, which were adopted:

Resolved, That the Indiana Wool Growers' Association heartily concur in the action of the Senate of the United States in passing the Senate Bill, giving increased protection to the wool industry of the United States.

Resolved, That we respectfully ask our representatives in Congress from Indiana to give this Senate bill their support.

Pending the adoption of the resolution, the following discussion ensued:

Mr. Cowgill. I am not prepared to say precisely what the improvements in that bill are, over the present law regarding the protection of wool. I am satisfied from the reports I have seen in the newspapers, especially in the Journal of day before yesterday, that the duty is increased considerably above what it is under the present law. I recollect from the report of the Journal it divided wool into three classes—combing, cloth and carpet wool. The duty on the two first is twelve cents and somewhat higher on carpet wool. It also proposes to levy a heavy duty upon weight shoddy wool and rags which would be a great benefit to the wool interest which is about the extent of my information regarding this matter.

The Committee on Resolutions further reported as follows:

Your Committee to whom was referred action in reference to the death of Dr. A. C. Stevenson beg leave to make the following report:

Dr. Alexander C. Stevenson was born in Woodford County Ky., November, 1802, died at his home at Greencastle, Ind., January 2, 1889. In the death of Dr. Stevenson the State has lost a prominent and honored citizen; the wool growers an active member. He lived to a ripe old age taking a lively interest in all the live stock associations of the State until death claimed him. His work on earth for the cause of agriculture will be as enduring a monument as time itself. We recommend that a few moments of the time of the association be taken to give expression of the feelings of this convention on the death of this honored member.

REMARKS ON THE DEATH OF DR. A. C. STEVENSON.

Dr. Ryland T. Brown, Indianapolis. There is some propriety in calling on me for remarks at this time. I was an associate of Dr. Stevenson for a number of years on the State Board of Agriculture, and know somewhat of his worth. With regard to the introduction of fine stock, Dr. Stevenson was the foremost stock man in organizing the present State Board of Agriculture. There were three leading spirits in Indiana to whom we are indebted to-day for our State Board of Agriculture (all of whom have passed away), and all that it has done in the various interests of agriculture in the State of Indiana. Those three men were Joseph A. Wright, Dr. Stevenson and General Orr, of Laporte; they shouldered the whole business at the start, working a bill creating the State Board through the Legislature in 1850. It first contemplated the organization of county societies. The State Society is built on the organization of county societies, which was created by a delegate Board from the county organizations. It was hard work to get up enough societies to organize a State Board; but in 1852 they succeeded in getting here a delegation representing about twenty-five societies out of the ninety-two counties, and proceeded with that delegation to sustain the Board. The act had appointed a State Board in its creation, but it never acted as a Board only to get

up county societies. In the organization of these societies they assumed the functions of a delegate Board of Agriculture, and proceeded to create the State Fair. It has been stated in a number of papers that the first State Fair was held at Lafayette, which is a mistake. We held a State Fair in Indianapolis in 1852 at Military Park, and we had a good fair and fine stock. Dr. Stevenson led in the stock interest. It was a close contest between him and Gen. Sol. Meredith. Dr. Stevenson exhibited full-blooded Merino sheep, the first introduced in Indiana, and some Shorthorn cattle. He did not import any until two years later, when he went to England and selected a herd. The first brought to this country was brought by Dr. Stevenson in 1854. The State has maintained the State Board of Agriculture from that time on. Gen. Orr succeeded Gov. Wright for one year—the year 1854—and then Dr. Stevenson held the office of President up to 1860, when he declined serving any longer, but still retained his place as the head and front of the stock interest in Indiana, and held it until old age prevented him from taking care of stock. He owned 2,000 acres of land as fine as any in the blue grass regions of Kentucky. I remember of talking with him about his blue grass, for we had a discussion here once about blue grass, and the Doctor concurred in what I said, that blue grass is not an imported grass, but a native grass, and was found along the northern border of the United States when the white man first came here. I remember talking with the Indian chief Chozino up on the Mississinnewa, and he could not tell from where it came. It is growing wild in the Rocky Mountains of Montana. When the botanist of the United States made an examination of the wild grasses he said blue grass was a native of Indiana, and grew here better than in Kentucky. Dr. Stevenson never lost his interest in the agricultural industries of the State, but his specialty was sheep and Shorthorn cattle. The Association of Wool Growers and Shorthorn breeders owe their origin to Dr. Stevenson.

Fielding Beeler, Indianapolis. I have been acquainted with Dr. Stevenson for many years, even as far back as when he was a member of the House of Representatives of this State, and more so since the organization of the State Fair. We could hardly hold a fair without him. He has done more perhaps to forward the stock interests of the State, especially sheep and cattle, than any other man and was the earliest breeder on a large scale in the State. He was a member of this organization and an honorary member until death. He was with us two years ago and we older members of this association know the interest he took in sheep husbandry in connection with all other industries of the State. The dogs in his section of country became so annoying, that he abandoned sheep husbandry and took up the cattle interest. I think in his death we have suffered a great loss.

J. W. Robe, Greencastle. There is one little feature of his character which came out recently, of which I wish to speak. He was a man of no ordinary degree of intelligence and doctor of medicine, his mind was always on some grand and intelligent theme, carrying out his thoughts in literature and study in this way. He would discuss at meal time some intelligent and interesting topic and made his reading conform to this up to the time of his death. Some of his friends visited him during his last sickness and one of them said to me he could sit and hear him talk for hours, his discourse was always so full of interest but at that time he was

not able to talk much. Only last year or year before, the institution at Greencastle (DePauw University) conferred upon him the degree of LL.D. He was in every way worthy of the title.

Dr. Brown. At the first medical convention in Indiana there were about fifty doctors present. Dr. Stevenson was one of twelve who held diplomas from a medical college. The others were good men but held no diplomas. The men educated at medical colleges were scarce in those days. He graduated at Transylvania.

The resolutions were adopted by a rising vote.

Mr. J. L. Thompson, from the Committee on Expert Judges, recommended the following gentlemen as "competent" to judge sheep:

Long wool—T. W. Samuels, of Kentucky, S. W. Dungan, T. C. Phelps, W. D. Privett, J. R. Tomlinson and J. B. Herkless.

Fine wool—J. L. Thompson, Uriah Privett, Thomas Wilhoit and Harvey Collins.

Middle wool—Cal Darnell, Mortimer Levering, Uriah Privett, J. C. Phelps and John R. Tomlinson.

All around judges—S. W. Dungan, T. C. Phelps, W. D. Privett, J. R. Tomlinson, Cal Darnell and U. Privett.

Mr. Mitchell. I believe the report should be amended, instead of using the word "expert," use the word "competent." That word "expert" implies a great deal. I think we should modify it a little.

Mr. Thompson. I have it "competent" to make "experts" judges.

Mr. Mitchell. That will do.

Mr. Thompson. One reason we make it general, the State Board of Illinois has asked us to select men that they can use if desired.

Mr. Mitchell. Suppose the State Fair should adopt a section consisting of sheep under the various breeds, it would justify selecting a man for the three different breeds.

The report of the Committee was adopted as amended.

Will W. White, of Franklin, Ind., read a paper entitled:

HOW SHALL WE MANAGE TO GET EARLY LAMBS?

I would not have you understand that I feel myself competent to instruct the members of this association, who have grown old in the service of sheep culture, and thus accumulated by actual experience vaster and richer stores of information than is possible for one of my age to possess. But it is healthful to people in all departments of business, to be reminded occasionally of things they already understand. That they may be induced to arouse themselves and make an effort to reach a higher plane. So if we can succeed in bringing out a discussion on any point from you who are informed on this subject; or if anything can be said which will stimulate the general farmer who is continually neglecting his flocks, thereby losing money himself and discouraging others in the business, or if anything said in this paper, or may be drawn out from others by it that will open and illuminate the way of any beginner, I shall be gratified, and feel that

my time has not been misspent. We have for our consideration one of the most important, and at the same time one of the most complex subjects with which the sheep breeder is concerned. Because the question of early lambs is the all absorbing question with sheep raisers, as they grow out better and develop into a much higher grade of animals, leaves the ewe in much better condition in the fall, and bring better prices in an early market. As to the benefits resulting to the sheep breeder from early lambs there can be no doubt. But is there any way to influence and control our flocks in this regard? Is there any thing in nature which can not be overcome, and which renders all efforts in this direction fruitless? Or, is not there some way to care for our males and females? Isn't there something in the kind of food; in the temperature and general condition and healthfulness of flocks; which will enable us in a measure to overcome nature; by which we may not only increase the productiveness of our flocks and bring forth strong, vigorous lambs, but also to bring them upon the stage of existence earlier in the spring than is usually done. If such a thing is possible, it is very important that it be given a very careful consideration by every sheep breeder.

The question as to early or late lambs is one that each breeder must settle for himself, according to the climate and his convenience for caring for them. For the range flockmaster there is only one answer to the question. He must so time the service as to bring lambing on grass. The grower in the agricultural regions, and especially those who form this organization, have other considerations. With early mutton lambs in view, January and February lambing is indispensable to the highest measure of profit. There are two reasons why it pays to raise early lambs. First, if your lambs are dropped in January and February, they will be ready for market by the first of May, and bring nearly twice as much as late ones. Second, by fall your old ewes are fat, and those you do not want to keep as breeders will bring a good price on the market. In considering this question, it naturally divides itself and falls under three general heads; first, is management and care of ram and ewes during breeding season; second, is management and care of ewe and lamb immediately before and after the birth of the lamb; third, management and care of lamb at weaning time. These are the three important epochs in the life of a sheep, and upon the careful and painstaking attention of the flockmaster at these times depends the success or failure of the business. At these times we can make money or lose it very easy. The selection of a ram is very important. It is impossible to obtain good results, even with the best of ewes, if they are served with poor rams. In selecting these there are some points which should be carefully looked for, and others that ought to be just as carefully avoided. Always select a ram whose ears are warm, as a cold-eared, cold-blooded animal is of no value. The scrotum should be well covered, and the wool joining onto the belly. The spermatic cord thick and large. Skin of a bright ruby color; as a large pendulous scrotum, with small cords, betoken a weak constitution. And as an additional guarantee of good constitution, a ram should be sought which has a short-brood head and powerful jaws. The lower jaw spread well apart. Between the lower jaw and under the tongue are the salivary glands, and if the jaws are well spread these glands will be large and afford a good supply of saliva; a very important assistant to digestion and feebleness of constitution. A long head

and narrow jaw denote a deficient supply of saliva, consequent lacking of digestion and feebleness of constitution. The great safety lies in the selection of a ram that has the fewest defects. Although breeding from the prize winners is not absolutely safe. Beware of a ram which requires to be reshorn in August in order to lighten his burden and cool his blood so as to enable him to undergo the fatigues of the autumn service. Constitution is nine points of the ram; as to defects to be avoided, steep rump, crooked leg are all signs of weakness, still, however, objectionable these points may be, they are not to be compared with flat nostrils and weak posters; a straight thin ewe nose and thin ewe fleece all of which denote poor constitution. The test of the first importance is the bright rosy skin; a ram may have defects, but if he has this he has constitution. The ram after being selected and decided upon should be in a strong healthy condition, liberally, but not overfed, and should not be allowed to run with the ewes except in putting time. About the first of August the ram should be taken up and stall fed; there is nothing better than oats and a little wheat occasionally will be beneficial. As far as possible breed your ewes in September and October. Although a late lamb is "perhaps" better than no lamb at all, but they never add any beauty to the flock. In using a ram, if he be young, it is necessary to begin work with him a few days before you wish to breed the entire flock, as they frequently refuse to work at all. The shears should be used on both ewe and ram so as to avoid any obstruction.

It may seem to some that the general makeup of the breeding ewe is a small matter. But in her lies the germ which develops your future flock for better or worse. The ram which sired your lambs gets his potency from his dam. The lamb must draw its support both before and after birth from its mother. Therefore, in making up the breeding flock let every defective ewe be rigidly rejected. In a wild state, where the weakest perish, and only the strongest survive, nature breeds all the while a better and better type. But in an artificial condition, where all the animals are preserved, good, bad and indifferent, we have the reverse. Man must perform the office of nature by rejecting the defective specimens. A great many of the characteristics of a good ram should also be sought in the ewe. The greatest point of difference, of course, must be determined by the sexual functions. The principal faults of carcass are too narrow chested, or between the fore legs; too much slope on rump, and the most general of all faults, too thin through hams, giving them a pinched-in appearance from behind. The breeding ewes ought to be subjected to the best possible hygienic influences, the most important of which are good ventilation, dry quarters and abundance of exercise. They should receive but little if any corn during gestation. Turn your ram with ewes about 5 o'clock in the afternoon. Take him out about 10 next day and feed him. This will give him rest in the heat of the day, and he will persuade with increased energy. From this frequent turning in draws the attention of ewes. As soon as one is served turn it out. From his persuasion and the friction of thought running through the mind has an influence which bears favorably upon the reproductive passions, as any little school boy can testify to this. It is of the utmost importance that the ewes be in good condition, but not exceedingly fat. Salt them frequently, and keep the blood in good condition. See that their kidneys are not too

active from green food, as clover and other influences. The kidneys are in sympathy with the glands of the womb, as you all know, this organ acting as a sponge, continually absorbing the impurities of the blood. Thus we see it is of the utmost importance to keep the system as healthy as possible. Says Dr. Draper: "The rapidity with which deleterious substances are conveyed out of the system is shown by the fact that if a dose of iodide of potassium is taken it may be found by suitable tests in urine passed ten minutes afterward." Any thing that is so exceedingly active or washy as green clover has a tendency at least to cause abortion, and there are some reasons for the belief that there is something in the inward heat of a sheep which would not only produce the same result, but hinder conception, thereby increase the difficulty of obtaining very early lambs; and it is possible that this difficulty might be overcome, in some degree at least, and the temperature of the breeding flock lowered by furnishing a sufficient amount of shade and pure water. And beneficial results might be obtained in this direction by changing the usual time of shearing, thereby diminishing the difficulty of procuring very early lambs. For our best woolled sheep I seldom get in lamb until cold weather. The earliest lamb we ever had was on Christmas day, and it out of a ewe of poor quality and but little wool. We have noticed that scalawag ewes, with scarcely enough wool to keep them warm, have the earliest lambs. Sheep, and especially "breeding ewes," should have, as near as possible, but one shepherd, should be dealt with gently and fed regularly, as any sudden fright or over-feed is also liable to cause abortion. It takes but a small amount of corn to produce this result. They should not be confined in their house, but allowed to run in and out at pleasure.

For they will lose their wool and produce weak lambs if warmly housed. From the fact of the peculiarity which belongs to sheep, which cause them to all get ready at the same time to pass through gate-ways and in and out of their house. All portals should be made exceedingly wide, or provided with wings, so if more than one attempts to enter, they will give and again spring back to their proper places. We have a condition powder we can recommend for ticks and general condition. Being of our own compound, consequently the proposition is not very accurate. Take charcoal (hickory we prefer), powder it. (For required amount, it will be necessary to be governed by size of flock.) Put in sulphur until well colored, then salt, gympson seed, a little lime and enough bran to make them eat it well. Keep continually in their house. There is another very important thing in the management of sheep and especially breeding ewes. That is the manner of taking hold of them. Should it be necessary at any time to catch one, take the left hind leg in your right hand, let it kick back in your left arm, place hand under chin and let go of leg. Should it attempt to run, throw its head up. You have it powerless; but if at any time you can slip up and place one hand on top of head the other under chin, we prefer this method from all others. As soon as the lamb is found after birth, its nose should be cleaned out that it may breathe freely, and then, together with its mother, be separated from the flock until it is able to distinguish its mother from other members of the flock. All wool should be carefully clipped from around the udder and the milk started from each teat, as it sometimes so clogs, that a weak lamb cannot start the flow, but as far as possible let the

lamb find nourishment itself. If at any time the presentation of lamb is irregular, or any trouble arises, assistance should be given immediately, which is very easy, but we will not attempt any instructions on this point in the presence of our veterinary surgeon. If at any time the ewe fails to own her lamb, there are different methods recommended, such as shutting them in a pen so dark that she can neither see nor hear anything but her lamb, and rub brandy on the lamb's rump and ewe's nose. Sprinkle a little salt on the lamb so that its mother will be induced to lick it.

To make an ewe take another lamb after she has lost her own, tie the skin of the latter on the "adopted" youngster. If at any time the lamb is weak and sickly give it a spoonfull of hog's lard, and repeat the dose in a half hour if no better, as this cuts all phlegm and makes breathing more easy and gives strength and tone to the system. But of all things there is nothing like sunshine for young lambs. This gives them more strength and growth than anything else. Should they get chilled at any time give them some rum with a little asafoetida dissolved in it. This we would recommend to have ever ready for use. We do not think it best to castrate or even dock lambs except breeders, which should be done in the evening after about two days old. For docking stunts the growth to some extent. Last year we weighed two twins (bucks) weighing six and twelve pounds respectively; we docked the latter and weighed again in one week, and the former made the most gain. A sheep box should be mounted on a sled, so if a lamb is dropped in the field you can easily (by hooking onto a gentle horse, or behind the farm wagon) haul them home. The box should have a partition at one end, so the ewe can lick her lamb, but can not step on it. Feed ewes oats and bran soaked in milk and dishwater; have troughs low enough that lambs may learn to eat with them. And as soon as they have learned, construct a partition that they may go in and eat at leisure of food, if possible soaked in sweet milk. A rye pasture joining barn will be excellent for an hour or two's sun each day. Manure should not be allowed to accumulate in barn, as the gases arising from it are very unhealthy. It is one of the most prolific causes of bad outcome with pregnant ewes, failure of milk, disowning of lambs, fever, shedding of wool and perhaps death. One of the most critical periods in the life of a lamb is at weaning time. They should be turned in a field with plenty of shade, water, and short, sweet grass. A good plan is to turn in with them an old ewe, to lead them to water and keep them gentle. A little oats, fed daily, will be beneficial. We have had them to get snagged from running in the woods, or otherwise wounded and fly-blown. We know of nothing better than turpentine with a little carbolic acid in it. Have cured bad cases with one application. Calomel is recommended to be excellent, especially for the deep recesses about the ears. We would say in conclusion that there are only three short periods each year that sheep require any extra attention; these are, in breeding season, lambing time and weaning time. After having passed through two of the most trying and most distressing years ever passed through in Indiana, by one who has but only reached his first score years, we have had but little encouragement to work for the interest of the future sheep. But has it not taught us a lesson by which we may all be benefited? We have learned that it is the sheep that stands the drought and cold best of all other farm animals, and, to the amount of money invested,

brings in the greatest returns. It matters not what may be the condition of the atmosphere or the government. Should this production reach any farmer who does not raise these most profitable of all farm stock; should he once become acquainted and attached to a business that furnishes both food and clothing with little cost; and on account of their quiet and harmless nature, whose children might feed and control them with pleasure and instruction; he certainly would acknowledge them to be the animal nearest perfecting the wants of men than any other known to the human family, as they have ever furnished him food, clothing and drink.

DISCUSSION.

I. N. Cotton. I have failed for two years to have early lambs. I turned my buck in with my ewes, and to-day out of a flock of thirty ewes I have not a single lamb. I have a neighbor who has lambs two weeks old.

Mr. Beeler. If the gentleman will go down in Brown county and gather up some of the old ewes trailing over those famous hills, he will have early lambs. Lambs which come along in January and February are generally from these kind of ewes.

Mr. Beeler. Jimson seed is used and given to sheep in a powder, but should be used with discretion. I never select bucks with extra broad heads; when they have extra large heads they don't breed well.

Mr. Cotton. If I have to go back to the kind of sheep of which Mr. Beeler speaks to get early lambs I will quit the business.

Thomas Nelson, Parke County. I feel that we have been well entertained by the paper read by our young friend, and while there may be several items in the essay to which several of us might object, still if all the wool growers attending this meeting would make it a point to prepare themselves as he has done, we would have a more entertaining meeting.

Mr. Mitchell. The paper read was a good one, but there is one thing we should hold in view in all our State Institute meetings, that is, the highest compliment paid to any paper is the severest criticism. There is nothing that can discourage so much as to pass a paper by and not say anything about it. We should have discussion on these papers. If I write a paper I consider it a high compliment to me if you discuss that paper. Our discussion is not in an unfriendly spirit, but is of a character that we may be benefitted by it.

Will W. White, Johnson County. I do not take any offense at this criticism; there are many things we can not explain on paper. Sheep are the nearest thing to children, and in some respects require similar treatment. Lambs seem to be troubled sometimes with phlegm in their throats. For this I give a teaspoonful of lard. For lambs that have become chilled, brandy and sulphur is good. I have brought many through in that way. Sheep turned in a Jimson grove will eat it. I believe it is good for them. I aim to supply them with this seed but shall endeavor to use caution. I let my Jimson grow and gather it in the fall to supply my sheep.

Mr. Beeler. As to handling early lambs when the weather is cold and they have become chilled, I have put them in warm water and saved many lambs by such treatment. I never could succeed in saving many by laying them by the fire. In using water I would have it moderately warm, so you can put your hand in it. When it has revived up, give a little warm milk. When I use spirits, I use gin instead of brandy.

G. C. Thompson. I have had a little experience in raising early lambs for market. I find I have to use extra care and attention in the way of shelter and feed if lambs come in cold weather. I find it don't pay me to have them come before good weather, so they can get grass. I bred my ewes last fall, aiming them to come about the first of April, and I expect to have as large lambs in July as if they had come in February or March.

Hon. Calvin Cowgill. I long since came to the same conclusion as my friend, Mr. Thompson. It don't pay to try to raise early lambs. Perhaps where you are near a good market with a small flock, it may pay to have them come early to get in market early, but if you have a large flock, from 80 to 100 ewes, you must take into consideration the fact that your ewe don't hold as good flesh as she would if she did not lamb until spring. The extra care required is very plain, and in my judgment there is very little advantage, if any, in winter lambs over spring lambs. I aim to have my lambs dropped in April and May, and from my observation, by weaning time, which is about the first of September, my lambs are as good as lambs which come in winter. Again, my ewes are in good condition. I have grass for them, and they suckle better, the lambs grow faster, and are not stunted, which is different with winter lambs. I never allow ewes to be coupled with the ram until from the first to the tenth of November.

S. W. Dungan. I consider a February lamb an early lamb.

G. C. Thompson. I don't want them to come before the first of April. I will then have a good lamb by the first of July.

J. E. McGaughey. For the last two years I have had my ewes lamb the first of April, and sell at weaning time on an average from \$2.75 to \$3 per head.

J. L. Thompson. We can not have lambs come too early, but we must take care of them. When I was taking care of my sheep I wanted early lambs, but when I turned them over to others to look after I found that late lambs were as good or better than early lambs. The professional breeder must, of course, have early lambs, but for the common farmer, if away from the city, it is better to have them come late. Perhaps it will do to have them come early if near the city. I think I understand the wants of the common farmer. I first started breeding early lambs, but now have them to come a little later, say about the first of May. The ewes are in better flesh and the lambs are healthier. Coming early they get stunted, and we never can get them to grow right, while an April lamb grows fast and makes a better sheep. I differ with the gentleman about the manure. It is not necessary to clean the stable out every day. We should keep it well littered, but it will not hurt to let it go two or three months at a time. We clean ours out twice during the winter and spread it on the ground,

J. E. McGaughey. As to cleaning out manure, I never have yet cleaned my stable until I quit stabling in the spring. I do not know whether it is best to do so or not, but I keep it well littered, and have never had a sheep to show any sign of sickness or disease.

J. L. Thompson. That is my experience. The reason we clean out once or twice during the winter is because we can do it cheaper then than in the spring. We made more off the manure than from other kind of stock. My land is increasing in value all the time.

Chairman J. W. Robe, from the Committee on Programme, submitted the following, which was concurred in :

PROGRAMME NEXT YEAR.

1. President's Address.
2. Is it Best to Breed for Mutton and let the Wool take Care of Itself? Isaac Williams, Muncie. Discussion led by John E. McGaughey, Galludet.
3. How Shall Sheep Husbandry be Managed to Supply Our Home Consumption in Wool? C. Cowgill, Wabash. Discussion led by C. A. Howland, Indianapolis.
4. Can Sheep Husbandry be Made as Profitable in America as in England? J. L. Thompson, Arcana. Discussion led by Hon. J. N. Davidson, Whitesville.
5. How Can Sheep Husbandry be Managed in Order to Make it a Success as a Specialty on the Farm? M. W. Collett, Metea. Discussion led by T. C. Phelps, Greensburg.
6. Merino Against the World. W. L. Morse, Mansfield, O. Discussion led by G. C. Thompson, Southport.
7. Silos and Ensilage. L. B. Skinner, Denver.
8. Does Depression in the Wool Market Have the Effect to Improve the Flock, and How Can It Be? Joshua Strange, Arcana. Discussion led by Fielding Beeler, Indianapolis.

"How to Treat Wounds and Diseases of Sheep?" was the subject assigned to the State Veterinarian. He did not respond when called, and the following discussion ensued :

Thos. Nelson. I have not had any sheep killed by dogs and I do not know about treating wounds of that kind. I understand that it is somewhat difficult to cure wounds of that character. I would like to hear from others on this subject.

Mr. Beeler. I have had some experience with sheep lacerated by dogs. There is something poisonous about a dog bite which makes it difficult to heal. My experience is that it is nearly always sure death. Turpentine or tar is good to put on them.

Mr. Mitchell. I had some experience last fall with dogs troubling my flock, some were killed outright, while others were lacerated badly. The best thing I could apply to the wounds was warm gas tar, but even that did not save the sheep. I also used coal oil and turpentine, but finally was compelled to kill them.

I. N. Cotton. There is no money in doctoring sheep when badly hurt. There is no better dressing for a wound than dilute carbolic acid, it kills insects, ticks, etc.

Mr. White. Last spring I docked some of my sheep and the end of the tail filled with maggots; I applied hog lard and carbolic acid, which removed them.

Mr. Mitchell. A strong decoction of the bark of the elderberry mixed with lard, is a valuable remedy.

Mr. Cotton. Crude carbolic acid is cheap and does the work very effectively.

G. C. Thompson. The best preparation in my opinion, is that alluded to by Mr. Mitchell.

Mr. Moody, Eminence, Ky. We apply turpentine and then a bandage soaked in tar. We cure three-fourths by this method. Sew up the wound if large enough to require it.

J. D. Bray, Hamilton Co. In speaking of the different remedies for maggots getting in wounds, there is one remedy not yet mentioned, that is sorghum molasses. If anything will make a maggot travel, that will. (Laughter.)

S. W. Dungan. They say it is good for buckwheat cakes. (Renewed laughter.)

Officers were elected for the ensuing year as follows:

President—I. N. Cotton, Traders' Point.

Vice President—Hon. Calvin Cowgill, Wabash.

Secretary—J. W. Robe, Greencastle.

Treasurer—John L. Thompson, Arcana.

Executive Committee—S. W. Dungan, Franklin; Fielding Beeler, Indianapolis; Robert Mitchell, Princeton.

Governor A. P. Hovey, on being invited to address the wool growers of the State, appeared before the convention and spoke as follows:

GOVERNOR'S REMARKS.

"Mr. President and Gentlemen of the Indiana Wool Growers' Association: I am invited to address you, and as I am unable to speak to you practically on your growing industry, I will content myself with talking to you of some of its theoretical relations to the country at large. I am in favor of sheep culture if it had none of the much talked of wool on its back. There is no better meat this country affords from the cabin to the White House than mutton, but I am still in favor of sheep for the production of wool. I may be a little partial to wool [laughter], but I am certainly and unequivocally in favor of protection of all kinds of articles needed by the people of this country, being produced in this country. If you go back a few years a man of my age can remember the kind of fabrics our mothers used to make and wear. In cotton these articles cost from 18½ to 37½ cents, and even as high as 50 cents per yard. Now the identical articles can be bought for from three to four cents, or at the most six cents, per yard. The question is, what has caused this great reduction in prices? The cause may be told in three words: Competition did it. Now to-day this reduction has saved millions of dollars to our people by the cheapness of the cotton fabrics of our country. I would like to see Indiana covered with sheep on every hill. Our State, perhaps, is not especially adapted to this product as some others are, still wherever our farmers are favorably situated to raise sheep they should endeavor to do so, for

they are one of the most profitable and solid investments the farmer can make. Your industry is a most promising one, and deserves the protection you claim for it. In conclusion I will say that I am happy to meet you on this occasion, and thank you for the privilege of thus addressing you briefly.

Mr. Cotton, on being conducted to the chair, after his election to the Presidency, said :

Gentlemen, I feel it no little honor to preside over men of this class, men of intelligence, with whom I have been meeting with for years, with the knowledge they have, and education probably far ahead of mine, I feel it a compliment and also the deep responsibility in assuming the duties of the office. I thank you for the trust you have confided in me.

J. W. Robe read the following paper on

AMERICAN WOOL FOR THE MANUFACTURER.

Nothing in the history of the United States so strongly indicates the wonderful advance we have made in woolen manufacturing as the enormous increase in the production of wool from the first enactment of the tariff of 1867 up to the year 1884, and nothing so certainly indicates what the fate of that industry would be as does the decline in the production of wool from the enactment of the tariff of 1883, up to the present time. As great as was the increase in woolen manufacturing, wool growing kept pace with it, and Messrs. Judd & Root, in a resume of trade issued in 1883, stated "For the first time in our history we have arrived at a point when the production of wool nearly equals its consumption by the mills of the country." Mr. J. R. Dodge says in 1887 "that whereas in 1850 one-half of the wool we used was imported, now only one-fourth needed by our mills is Foreign." The following statement prepared by the Philadelphia Wool Merchants' Association shows clearly the effect of the tariff legislation of 1883 upon the sheep industry of the country. It also shows what the probable condition of that industry would now be, if the wool and woolen tariff of 1867 had not been disturbed :

	<i>No. of sheep as per Agr'l Department.</i>	<i>Estimated No. if rate of increase had Continued.</i>
1880.	40,765,900	
1881.	43,569,899	
1882.	45,016,224	
1883.	49,237,291	
1884.	50,626,626	52,300,000
1885.	50,360,243	56,000,000
1886.	48,322,331	59,900,000
1887.	44,759,314	64,000,000
1888.	43,544,755	68,480,000

By this statement it is seen that the loss in sheep since 1883 has been 7,081,871, and by the same it is shown that if the rate of increase from 1880 to 1883 inclusive, had continued from 1884 to 1888, the gain would have been 24,935,245, or we should now have in the country nearly 70,000,000 sheep, capable of producing 450,000,000 pounds of wool, which would make us the first wool producing country,

in importance, in the world, instead of our being the second, which we now are. We have all the natural advantages to enable us to take that position, and our rapidly increasing population demand that we shall have it.

It has been said "From Mexico to the British possessions, from the Missouri River to the Pacific Ocean, an area of more than a thousand million acres (not including Alaska), has been for ages the home of countless numbers of the buffalo, the antelope, and on the higher elevations the Rocky Mountain sheep, and the Rocky Mountain goat. Here are millions of acres which can be used for no other purpose, and will be idle, uninhabited wastes unless utilized by raising sheep." The Tariff Commission of 1882, in its report, said, "Not a State in the Union, and in some of these not a county, but has some portion of its wealth invested in wool production."

Mr. George Wm. Bond states in his report for the United States Bureau of Statistics: "There are portions of the Western States and Territories, Montana in particular, where they are rapidly improving the character of their wools, and much will probably be had from these sections, when they have been longer settled and provision made for better protecting and more uniform feeding of sheep."

Mr. Jas. Lynch places the clip in the Western States and Territories and Pacific States in 1867 at 18,000,000 pounds, and in 1887 at 154,000,000 pounds, an increase of 136,000,000 pounds in twenty years. This is a wonderful increase, and when the vast plains and ranges of this region, which have not been occupied for sheep raising, are considered, it is evident that with a continuance of favorable legislation, we can produce all the wool the country may require for many years to come.

All the wool grown in this country can be used for clothing purposes, and since the improvement in combing machinery a very large proportion can be used for worsted purposes, while the coarse wool from any section can be used for carpets. Of the clothing and combing wool used we now import only 7 per cent.; 93 per cent. being of home production. With the single exception of carpet wool (and that need not be excepted if it were thought wise to give it the protection needed to stimulate its production) this country practically produces all the wool required by its manufacturers.

In short there is no kind of wool which may at any time be needed for any class of goods, but can be grown at home in quantities large enough for the greatest demand. Under the tariff of 1867 our flocks increased to an enormous extent, and if that law had been let alone, we would now be making every article of woollen fabric the people of America require, on American looms, operated by American workingmen, and from American wool.

According to the United States Bureau of Statistics the wool consumption of 1886 was as follows:

Clothing wool imported	23,195,734
Combing " "	9,703,962
Carpet " "	81,504,477
Home clip of 1886	<u>285,000,000</u>
Total supply to our manufacturers	399,403,573

Wool in the shape of goods, estimated at 3 lbs. of wool to the \$1 cost . 133,899,788

Total consumption	533,303,361
Deduct the carpet wool	81,504,477

Leaving as the amount of clothing and combing wool consumed in that
year 451,798,884

It is not likely that any tariff will be of so prohibitory a nature as to shut out all grades of woolens, and past experience shows that in the palmiest days of protection, we imported goods representing an average of about eighty million pounds of wool a year; so that the actual demand from our domestic manufacturers for clothing and combing wool at present is not over about four hundred million pounds per annum. By reference to table of estimated possible increase it will be observed that if the conditions prevailing in 1883 had been left undisturbed, as manufacturers and wool growers alike demanded, we would be raising to-day more clothing and combing wool than we could consume. a fact which seems to have been strangely overlooked by those who assert that we cannot grow enough wool for our needs.

England consumes about 418,000,000 lbs. of wool, and grows but 135,000,000 lbs. The continent consumes 1,033,000,000 lbs., and grows but about 566,000,000 lbs., a very large portion of which is coarse wool, suitable for carpets and blankets only.

The bulk of the fine wool of the world is grown in Australia, South America, Africa and the United States.

Of these wools, England controls absolutely the Australian, South African, and to a great extent, the South American clip, making altogether a larger stock of wool than is controlled by any other nation.

Make wool free (which the American people have just said it shall not be) and we depend upon England for our supply. Stand by and encourage our home clip and we are independent of the world; for if we did not receive a pound of wool from abroad we could make substantially the same goods from American wool without any foreign mixture whatever.

There is abundant reason why England, Germany, France and other manufacturing countries should place no duty on wool, because, although all produce wool of some sort, none of them can produce a sufficient quantity to meet the requirements of their manufacturers. Being, therefore, dependent upon other lands for their supply, their ports must of necessity be open to the wools of the whole world.

The population of this country is now estimated at 60,000,000, and the consumption of wool per capita at $8\frac{3}{16}$ pounds. Our people, therefore, require about 528,000,000 pounds of wool per annum. Of this amount about 95,000,000 pounds is used for carpet purposes, leaving 433 million pounds as the quantity required for clothing purposes. This country produced, according to Mr. James Lynch, whose figures are regarded by the majority of the trade as more reliable than any published, in 1884, 337,500,000 pounds; in 1885, 329,600,000 pounds; in 1886, 322,305,000 pounds; in 1887, 333,500,000 pounds; but had the increase from 1867 to

1883, which the tariff of the latter year checked, been maintained, the country would, in 1887, taking the figures of Mr. Lynch as a basis, have produced 474 million pounds of wool, a quantity greater than the needs of the people require.

No other country in the world produces so large a proportion of the wool it consumes, and in view of the unexampled increase of 177 million pounds which occurred between 1867 and 1887, no one can question the ability of this great Republic to increase its clip to any amount required, even if it be 1,000 million pounds, instead of about half that amount.

On motion the convention adjourned to meet January 23, 1890.

SWINE BREEDERS.

The Thirteenth Annual Session of the Indiana Swine Breeders' Association convened in the Lecture Room of the State Board of Agriculture, State House, on Friday, January 25th, at 1:30 P. M., and was called to order by President C. J. Clark, of Westfield.

The Secretary, Dr. C. A. Robinson, being absent, Mr. J. W. Pierce, of Peru, was appointed Secretary *pro tem*.

After reading the minutes of the previous meeting, President Clark delivered his annual address as follows:

PRESIDENT'S ADDRESS.

Gentlemen of the Indiana Swine Breeders' Association:

Never have we met under circumstances more favorable than this our Thirteenth Annual Meeting. The year has been a profitable one to swine breeders. We are receiving higher prices for our products this year than we have for the past few years, and finding a more ready market for our surplus stock. During the past year disease has made its appearance in some localities among our stock. But when has it demanded less of us than this year? We have paid a somewhat smaller annual assessment than usual to it for our ignorance in regard to the laws of the adversary health; we shall ever find disease prowling round ready to devour till we are educated to give proper heed to all sanitary conditions, bar every door, close every crevice to keep it out. It is highly gratifying to the swine breeders of Indiana, to know that the past corn crop was an increase both as to acreage and yield, thus securing feed in abundance for our stock. The winter has proven so far a favorable one, our stock requiring less feed and attention. The prosperity of the leading swine record Associations during the year shows the growing demand among farmers and breeders to retain only the pure blooded stock, with individual merit and gilt-edge pedigrees. It is quite evident that in a short time scrubs will be a thing of the past, known but by hearsay. The swine breeders of Indiana have given a fair trial of the popular method of disposing of their surplus stock by means of annual public sales, and were very much flattered with the success attained. Among the blessings of the year, is the growing popularity of the single expert judge method of awarding the premiums on swine at the State, District and County fairs. We hope ere long under this system to have men who

are educated in this special line that will give intelligent and just decisions to merit alone. I would suggest that you counsel during the session the importance of needed legislation in the interest of swine breeders, and when you have decided upon the measures most needed, assist our legislative committee by calling in person upon the Senator and Representatives from your several districts and solicit their help. We deplore the unfair and unjust embargo placed upon our American exportation of pork by the French and German Governments in their accusation of the healthfulness of our pork. May the day hasten when they will practice the more practical and wise method of encouragement to home products by levying a duty upon imported pork, and remove the odious brand placed upon our pork by them, leaving us to stand a fair trial with the other Nations of the earth. The purposes of the Association have been faithfully carried out; while growing more united, we have gained strength. We are living in an enlightened age, where education in all things take the lead, and it is growing more evident each day that a man cannot even raise hogs successfully without knowledge and labor.

REPORT OF STANDING COMMITTEES.

S. M. Shepherd, from the committee appointed last year to confer with the State Board of Agriculture, reported as follows: "The only duties we found in that connection was to get the premium list enlarged; the results of our efforts were not satisfactory."

From the committee appointed last year on legislation, he reported as follows:

"The bill drafted two years ago has been reintroduced and has passed the second reading in the Senate. Whether there has been any amendment to it I do not know; Mr. Thomas probably can give us more information. The bill has been reported back from the committee favorably, and, I think, without amendment. I have not had time to confer with other members of the committee in the matter. The bill authorizes the incorporation of this society and provides an appropriation of \$5,000 annually for the investigation of swine disease."

The report was approved and the committee continued.

T. M. Reveal reported on single rates as follows:

"I do not remember of us doing anything. In fact I do not remember the nature of the committee in regard to it, but I believe it was to secure rates from different express companies for shipping stock. There has been no sacrifice with me and I supposed all were accommodated with single rates."

J. H. Bebout. Is there any rate better than single rate? I ship, taking only the weight of the pig, and not the box at one rate.

T. M. Reveal. I have made arrangements with all companies in this city for one rate. They usually charge a rate and a half for shipping a pig. In shipping pigs in crates as a box of merchandise I have had some complaint in changing to other companies, especially southern companies which are more of a monopoly than some others. It is more difficult to get rates from southern companies than here. I think the trouble is with new agents coming in who have to comply with strict rules or letters of the law, and are a little close in such matters. It would be well

for us to give our experience in this matter and see how we stand on this question. I have always got single rates, except when transferring to other companies, when then I get a rate and a half.

Adam Foust. Some of us are not so favorably situated as Mr. Reveal and Mr. Bebout. That is the reason we had this committee appointed a year ago to secure single rates. Now we have the American and United States Express office at our place. We start our hogs on the American Express. They carry, as far as it goes, at single rates. Then it goes to the Adams or Southern, and they carry at one and a half rate. The object in appointing this committee was to secure single rates over all the lines.

James Mustard, Broad Ripple. I understand in this shipping business, that if a man ships a pig, and the expressage comes to \$5.00, that pig is to go to its destination for that sum. I have a case in my mind at present. I shipped a pig to Nebraska and told the man before hand what the expressage would be. When the pig arrived at its destination the overcharge was \$7.50. He sent me a bill. I came down here to the State agent and reported the facts to him, and in two weeks that \$7.50 was paid back and the man discharged. There is a great deal of overcharging, and it is nothing short of stealing. If they say they will take a pig for \$5.00 they have to do it, and when they do any other way they simply gouge you. I hunt them up and make them stand to their contract.

Mr. Comingore. I have made this question of express rates a study for the past two years. We can get better rates from Indianapolis to Reveals than Bebout can to Rushville. From my place I can send a pig via Indianapolis to Bloomington for \$1.25, but stop anywhere between that point it costs \$1.50. We have a good agent who has explained this to me. Some places you can send hundreds of miles quite cheap, while the rates would be much higher for a shorter distance from other points. I can send a pig to Missouri for \$3.00.

J. Strange, Grant County. There is a subject which I believe would be right to introduce at this time, that is in regard to a conference with committees appointed by the Association of Shorthorn Breeders and Wool Growers on legislative matters pertaining to the live stock industry and general agricultural interest of the State. I have been making an examination as to the condition of the bills relating to live stock now before the legislature. We have a live stock bill in part, but it does not include swine, that bill has passed the second reading and is engrossed. The swine bill before the legislature is reported back unfavorably by the Committee on Agriculture. I have been reliably informed since the adjournment of the Shorthorn Breeders' Association, that is the case, that the bill had no show of becoming a law. We have open in the legislature a live stock bill that should harmonize this matter and for all stock men of Indiana. I do not want them to leave out swine on my farm, and look after the condition of other stock. I am a swine breeder as you are, and have suffered heavy losses by infectious diseases. I represent a county that in 1886 lost \$100,000 worth of hogs by this swine plague. If we can not get what we want, let us get what relief we can. We would like to have a conference in some way on this matter. This is a question of equal interest to all political parties, and all parties are willing to include swine in the bill. If one bill will cover the ground and meet the interest of live stock entire,

I would encourage a bill of that character. I think I have in my brief remarks explained to you the situation. As this committee is continued we would like to have some endorsement or report of what we should do from this association, and there should be arrangements made for investigation, if through a special committee, while this convention is in session.

S. M. Shepherd. The bill has passed the second reading, and I understand the Agricultural Committee has reported favorably on it.

D. L. Thomas, Rushville. I understand the bill came up last week; I went to see after the matter yesterday; it was ordered printed. This morning Senator Urmston gave me a copy of the bill, which I will read. The bill has been amended reducing the appropriation of five thousand asked for to fifteen hundred dollars annually for the investigation of swine plague. Senator Urmston says it is not what you want, but acted on the theory that half a loaf was better than none.

J. H. Bebout, of Rushville, read the following paper on

“WHAT BENEFITS ARE PUBLIC SALES TO BREEDERS?”

You sell in one day the same number you would be from four to six months peddling out; and if the stock is properly prepared, well-advertised, and properly presented on the day of sale, it will bring a fair cash value—perhaps as much as in any other way.

In all my public sales the results have been entirely satisfactory. Some animals bring less than the value I would place on them, while others would bring more than I would value them at. At public sales you are relieved of all responsibility, excepting the guarantee of pedigree and soundness, as the purchaser's eyes become his market.

In shipping an order, there is often dissatisfaction caused, perhaps, by the difference of opinions as to the ideal hog. At public sales you prepare the stock you wish to sell, and leave nothing out, except such animals as you desire to retain in the herd. My experience has taught me that there will be a buyer for all classes. Otherwise, under the peddling system, you will have buyers to visit the herd, and they are sure to want the animal you have sold or the one you desire to keep for your own use.

The success of a public sale depends on the management. All men are not properly constituted to sell at public sale. It takes nerve, energy and ability. A man must have the nerve to sell a ten dollar gold piece for seven dollars and fifty cents, thank kindly the man who bought it, and immediately offer another; always keeping in a good humor, and never showing any signs of dissatisfaction; the nerve to advertise extensively in the face of all disastrous diseases that may destroy the herd near the day of sale; the energy to properly rear and prepare the stock for sale, and make such other preparations as are necessary, in order to properly present the stock on the day of sale. The word “ability” properly applies to the man with the above combination.

D. L. Thomas. I do not think we are quite through with this legislative business. If there are any members here who were opposed to the bill two years ago

we should know it. We should find out how people stand on this subject. I understand, since coming to Indianapolis, that there is some opposition to this bill. Let us know now what that is about so we can go ahead.

Adam Foust offered a resolution asking the endorsement of Senate Bill No. 159, now before the Senate. Pending the adoption of the resolution the following remarks were made:

J. Strange, Grant County. I want you to understand that I am not an enemy of the bill. There is but one point in it upon which swine breeders might differ: that is the point introduced in this Legislature upon which swine breeders are divided, and will be divided. We quarantine one kind of stock, and I would ask if one quarantine should not cover both. But as to making swine breeders responsible for scientific purposes in the way of investigation—that is right. There is no better one to act or more capable to advise than this body as to disease of swine, or whether we should embody two quarantine powers in the live stock industries of the State. I am willing to submit to the majority where that may be. My interest is for Indiana and for the growth and development of this great industry. There seems to be a misunderstanding in regard to this fund. I was informed that it was \$5,000 instead of \$1,500. There is now, I understand, a recommendation of \$1,500 for an appropriation which is reasonable enough for scientific investigation. The first bill introduced pays for stock destroyed to stop the disease, while this does not allow anything to pay us with. Under the live stock sanitary commission first introduced we got pay, but this one we don't—that is my understanding. I hope we will be treated alike in this matter, and if it is paid out of the treasury I want as much for my hogs as my cattle. If this bill passes in favor of my cattle I can collect so much money for my cattle and my horses and sheep, but not a cent for my hogs. After having suffered the heavy losses I have in the swine industry I want some provisions whereby we may have compensation.

Judge Shepherd. Is not this the same bill offered by Judge Buckles?

Mr. Strange. Yes, sir, with a few exceptions.

Judge Shepherd. That bill was thought not good for swine breeders. Some one has suggested that further discussion be deferred until to-morrow morning. I think it would be better to take up that discussion to-night.

F. Beeler. I move that further discussion of the Sanitary Commission Bill be deferred subject to the call of the Convention.

D. L. Thomas. If we are not posted on this now we will not be at all. Let us have a free discussion at once. Why should we defer this matter; now is the golden opportunity while the subject is before us. I trust that Mr. Beeler will withdraw his motion.

Mr. Beeler. My motion was not to throw any objection in the way. I think we should thoroughly inform ourselves of the nature of this bill. There are many new members who never heard of the bill, and we want to become acquainted with it and all act together in harmony. If some advocate one measure and other men advocate a different measure, we will not arrive at anything definite and practical. It was in the view of harmony that I made the motion.

D. L. Thomas. If those who have been working this up will direct more attention in the matter and members of this Convention, go to work and see the members of the Legislature from your localities, there will be no trouble in getting this bill through. We want to tell them what we want, and urge the necessity of its passage at once. Senator Urmston thinks it will go through the House.

J. H. Bebout. There are two strings to this bow. One bill is by the Shorthorn breeders, and the other by the swine breeders.

Mr. Mitchell. We are all interested in this meeting. We should set the time for holding the meeting next year before you adjourn. I want you to select Thursday instead of Friday. I move that when the Association adjourns it adjourn to meet on Thursday, this week, one year hence. Carried.

S. M. Shepherd. I hope this society will stand up and say that members shall pay one dollar, and not reduce it to fifty cents.

On motion of J. H. Bebout the rules were suspended, and the fee reduced to fifty cents.

"WHAT ARE THE BEST CROSSES TO BREED FOR MARKET?"

Was the subject of an article assigned Mr. E. A. Olleman, of Waverly. Mr. Olleman being absent, his address was read by Mr. J. G. Kingsbury.

Gentlemen of the Swine Breeders Association of Indiana:

In order to comply with your request to read a paper on "What are the Best Crosses to Breed for Market?" As the demand is changing from time to time, and as those of us who have reached middle age have witnessed several radical changes in the market's demands, I thought to gain information from some of the great manufacturing houses and commission men of known standing, and addressed a letter to several parties, in which I asked the following questions:

1. About what gross weight of hog commands the best price?
2. Do you find any particular breed commanding a better price than others?
3. From what part of the country do you receive the best hogs?
4. Please make any suggestions you see proper as to any improvement farmers can make to improve their hogs for market.

To which I received the following replies:

INDIANAPOLIS, November 19, 1888.

E. A. Olleman, Esq.:

DEAR SIR—As to your interrogatories, we will answer them as briefly and to the point as quite an article might be written on each one separately. In answer to first question: About 200 pounds. Second question: We should say the improved Chester White commands the highest price. Third question: We should say that we receive two classes of hogs at our market. Generally the hogs received from a line drawn directly through the center of Indiana and Illinois are two distinct types. The hogs north of said line are generally finer bred than those south of said line. The hogs from the north of the line are finer-haired and smoother looking. The hogs from the north are generally black or at any rate the black predominates. Those from the south are generally spotted and mixed with

white—are what we term old fashioned. They are very small boned and fine killers; are a favorite hog with the firm of Kingan & Co., but are slower growth and take longer to fully mature than those from the north of the line. As to our making some suggestions by which farmers can improve the quality and market value of their hogs, we should say in the first place that what we would say would in our best judgment be for the general good and not for the benefit of any class of breeders, as most all the different breeds have some claims to superiority over other breeds. Hence, a cross between the Poland-China and Berkshire is the hardiest and most profitable hog for the farmer and general hog raiser. "But," says some, "You must have a distinct type or breed to produce this result." True enough, and we will have, from the fact that each breed has its advocates who claim superiority and hence breed and raise the distinct type. Now while we have a great many other good breeds and good crosses and many of them have some very superior points of excellence, yet we regard the above cross as the most profitable one for the average farmer or feeder. But of all the breeds of hogs that are raised for sale, the one that we would rank as below all others is what is termed the Jersey Red. Now we do not say this to injure any breeder or class of breeders, but simply because our experience and observation teach us that such are the fact in the case.

Most respectfully yours,

M. SELLS & Co.

INDIANAPOLIS, Nov. 20, 1888.

Hon. E. A. Olleman, Waverly.

DEAR SIR: In answer to question No. 1—There is but little difference to the slaughter between the Poland-China and the Berkshire hog. If any difference, the Berkshire is preferable. I regard the Berkshire hog as most profitable to the farmer; they are more prolific and take better care of their young.

Second question—Central and northern Indiana and eastern Illinois furnish the best stock. There is not as much pains taken in breeding hogs in southern Indiana as in the central and northern parts, but hogs generally have more age when brought to market. The trade of the country has changed from large average size to small average size. I think there is more profit to the farmer in marketing hogs at about 200 to 225 pounds than to keep them longer. For this you want a small boned hog, easily fattened.

Yours,

FRANKLIN LANDERS & Co.

I was disappointed in not receiving an answer from Kingan & Co., of Indianapolis, and Phil. D. Armour & Co., of Chicago.

We must keep in view, in order to attain the most success, what the market demands and will pay the most for. I think it will generally be conceded that the market demands the fatted hog that will gross about 200 pounds, and that will average the best price, winter and summer, and this has been emphasized more this winter than ever before. Then the hog we are after is the one that can be fatted to 200 pounds gross, ready for market with the least corn and grass. I accept the fact that this is the feed of 90 per cent. of all hogs marketed by farmers.

Now, one thought here. After feeding hogs for thirty years in the valley of White River, I am fully satisfied that the 200-pound-gross hog is the most profitable

weight for the farmer to sell; or, to illustrate, it will take nearly as much feed to fat the hog to 300 pounds from 200 pounds as it did to produce the first 200 pounds. So the market demand has fixed the weight at the most profitable time for the farmer to sell.

This weight should be attained at nine or ten months old, by ordinary feeding, with a good breed of hogs. I like a pig that can be kept ready for market from the time it is weaned until marketed at any weight.

It is a gratifying fact that improved breeds of swine are more universal and widely disseminated in our country than any other kind of stock, and every part of our country is adapted to their growth and development.

Now, as to the best cross. The Poland-China, if we judge by numbers, is the leading improved breed, for they comprise probably 75 per cent. of the swine of the United States. The Berkshire is very popular, and has long been a favorite. The Chester White are beauties, and kill nice and clean, and are probably second to none as feeders. We say breed them all in their purity, they are all good breeds. But as to the cross to grow the 200-pound hog for market for the most profit, we prefer the cross from a Berkshire boar on the Poland-China sow, and the use of a Poland-China boar on the mix breed of sows in the hands of farmers. You have heard the opinions of Messrs. M. Sells & Co., and Frank Landers & Co.

The award of sweepstakes on hogs at the recent fat stock show held in Chicago has awakened some strange thoughts in my mind. What lesson was the award intended to teach? Was it to encourage farmers to grow stags for market? Was it to condemn the practice of pork manufacturers of docking stags eighty-five pounds (really a small steal) and then putting all in the same barrels? Who ever heard of the pork packer selling any stag hams, sides or lard? We have a theory. It was a Chicago bluff to Germany and France in awarding this premium, that as we had no American statesmanship to compel the admission of swine products in these governments, they had crowned and commissioned this great stag as head and chief of all his race, to stand as representative of health and purity until admitted to compete with his brother swine in the markets of Germany and France.

DISCUSSION.

J. H. Rebout, Rush County. The paper is a good one. All who meet here are, perhaps, breeders alike. I do not breed Jersey Red, but we want everything to stand alike and have the same showing. Mr. Sells places the Jersey Reds inferior to all others, which might cause some breeders to take umbrage. I think we should not print Mr. Sells' letter. We want to give everybody a warm shoulder.

Mr. Beeler. I never owned a Jersey Red in my life. It is not my favorite. About as nice a hog as I have seen here at Indianapolis was a cross between the Jersey Red and the Berkshire. I would not say that it is the best hog, but I have seen some nice ones of that breed.

S. M. Shepherd. This gentleman deserves credit instead of censure. Mr. Rebout's remarks implies that he wants us to ask the opinion and evidence of this meeting. Now, if we undertake to eliminate some of the information he has given,

why not eliminate all. It is not treating him just right, and it is discouraging future members who are assigned papers on any subject submitted to them. No honest Jersey breeder would take umbrage at this Society for publishing this paper. It is a matter of common fairness. I, therefore, move that this paper be received and submitted for publication in the Annual Report of the Board of Agriculture.

Adam Foust, Buckeye. In referring to Mr. Sells' statement concerning the Duroc Jersey, I have been reliably informed by a gentleman who shipped hogs to the Buffalo market that he could get from 15c to 20c per hundred more for Duroc Jerseys, because they were not so fat as other breeds.

"ARE FALL LITTERS PROFITABLE?"

Was briefly discussed in the absence of a paper on the subject.

I. N. Barker, Boone County. I would answer, they are, if you don't raise too many of them. Neither do I want them to come later at all events than the first half of October, and it is better if they come in September. All farmers have the kind of food adapted to young pigs, and can raise a few fall litters to good advantage; but if you try to raise a large number, it is difficult. A small number may be handled profitably and be ready to turn off next summer. I have fall pigs this year as good as I ever raised.

Mr. Apple, Marion County. If I can have pigs to come in February or March they will make better hogs in September than fall pigs. Last year I had September pigs, and in July last they weighed 200 pounds. Pigs that came in last March and weighed in December, less than ten months, 280 pounds. So I am satisfied it is most profitable to raise spring litters.

James Mustard. My friend Apple is overlooking one thing. The second litter don't cost fifty cents to raise, because you turn out on grass, but if you breed in the fall you have to winter that sow all winter to get one litter, while the second you turn on grass and it don't cost much.

Mr. Barker. These fall pigs will follow the cattle and pick up all the scraps, which you can not do with spring pigs, and they will be the right age next spring to put on clover. Early spring pigs fattened early in the fall are the cheapest hogs.

Geo. W. Smith, Boxleytown. The majority of fall pigs don't make a success, in my opinion. They require much care and attention, and must be kept warm. I do not think it is wise to let your hogs and pigs lay around old strawstacks, and feed thrown to such is a waste. As to breeding for market, from observation and experience for seventeen years, I am of the opinion that for the ordinary farmer it is best to take gilts and raise one litter from them and then put them off. The majority of the farmers through the country lose money by raising fall pigs; they too often make a mistake by not keeping them warm.

Joe Cunningham, Bunker Hill. I would infer from the remarks of some of our brethren that they do not understand the question. The question stated to us, I believe, is, "Are Fall Litters Profitable?" We breed our sows for February and March pigs, then the second litter don't cost any thing, and in the final wind-up in September, she is worth as much for spring breeding as if she never had fall pigs. Let an aged sow, if having pigs in the fall run to September before breeding, nine cases out of ten we have trouble in getting them to breed in the spring.

Where they raise fall and spring litters of pigs they catch up and go right on. In the first place the pigs alone do not give us the profit altogether, but in part the profit comes from the better shape of the sow. There is much profit in having aged sows from which we may raise two litters, but one litter is enough from a gilt. We can raise a few fall pigs successfully, but to overstock the farm with these kind of pigs it is a nuisance. As good show hogs as we have ever had have been fall pigs.

C. J. Clark, Hamilton County. What is your experience with males in regard to time between services?

Mr. Cunningham. My experience is they should never be turned to but one sow a day, and one service to get good, strong pigs. As to space between spring and fall breeding, as many sows as he can get the better. If they run two or three months they sometimes fail to get pigs.

Mr. Mugg. Mr. Barker, at what age would you allow your male to do service?

Mr. Barker. One year or over is best, but sometimes may do at nine months old.

Mr. Hamilton. I would ask Mr. Barker if he would like to keep a hog two years, or even one year, without trying him? Quite often we have boars that don't produce and are not breeders, would it be profitable to keep them that long without trying?

Mr. Barker. I would not, as a general rule, try one until he was one year old. I want to breed from a mature animal. One of the reasons we have so many feeble hogs, the common farmer is in the habit of breeding his gilts at eight months old one year, while the next he breeds young, immature pigs, and fosters, in a measure, the disease we have among swine.

J. H. Bebout. The Berkshire may have pigs at eight or ten months old, while the Poland-China do not.

Mr. Smith. We should keep our hogs until they are nine or ten months old before breeding. To breed earlier than that the results are not so good.

"IS IT PROFITABLE TO FEED CLOVER HAY TO HOGS?"

was the subject assigned John Harcourt, of New Augusta. Not having had experience in that direction, the theme was announced for discussion.

Dr. E. H. Collins, Hamilton County. My hogs run with my cattle, but have not noticed whether they eat the hay or not. It is under a shed, cut in early bloom. It is the English clover. The hogs will run around and catch the straws and eat the blossoms off, but have not noticed them eating the stalks of clover. Still I think they do, as there is no clover left on the ground. They take the blossom first and eat that off. They eat it freely, and it tends some to counteract the grain. We fed grain in the fall exclusively, but now we don't feed much grain, and they do quite as well. They will eat boiled potatoes in which may be put old scraps of meat, and frequently oats with potatoes; they eat it greedily, and will run from the corn to get it, but don't run after clover hay. It don't suit them so well.

Mr. Knott, Lawrenceburg. My hogs clean up clover hay. They seem to like it.

L. W. Hamilton, of Sandusky, read the following paper on

"IS IT POLICY TO RAISE THREE LITTERS OF PIGS A YEAR?"

Mr. President and Brother Breeders :

At the last meeting I was assigned the subject, "Is it Policy to Raise Three Litters of Pigs a Year?" to which I do not think I can give justice without having a more thorough test.

First, we want to find how long it will take to produce three litters, and what it costs. We find that it will take 334 days to produce three litters, and by feeding the sow five cents worth of ground feed and eight ears of corn per day, the cost of keeping her 334 days will be \$27.88. She is bred, and at the end of 112 days she farrows eight pigs, and they weigh three pounds per head, making twenty-four pounds. At thirty days old they weigh 264 pounds—at five cents per pound they are worth \$13.20, and have not cost anything. The second month we gave them one ear of corn a day, which makes two and one-half bushels of corn, costing seventy-five cents, and weigh, at the end of sixty days, 504 pounds, and are worth \$25. The third month they consume \$1.50 worth of corn and \$2.00 worth of ground feed, and are worth \$37.20. The fourth month they consume \$5.40 worth of feed, and are worth \$49.20. The fifth month feed costs \$7.00, and the pigs are worth \$61.20. The sixth month the cost of feed is \$9.50, and they are worth \$74.20. The seventh month it costs \$11 to feed them, and they are worth \$85.20.

The total cost of feed is \$37.15, and the pigs are worth \$85.00—profit, \$48.85. The cost of feeding three litters and the sow is \$129.33; the pigs are worth \$255.60, which leaves a profit of \$126.27. What better investment would you advise? But you think it will not pay to impose on nature, and breed a sow so strong. You will have more runt pigs, and the sow's produce will become weak, not uniform, without constitution and more liable to disease. Experienced breeders of fancy hogs recommend one litter a year. They are stronger when they are farrowed, better developed, grow stronger and hold the perfect shape. For instance we take Bess Stibbens. She was one of the best sows Ohio ever bred. She was only bred once a year, and she farrowed litters worth from three to six hundred dollars, when, perhaps, if she had been bred twice a year her pigs would not have brought half the money that one litter did.

In raising so many litters you have some in winter. They must have extra feed and warm quarters. You have the cold to contend with and no grass to give them; their systems get out of order, they draw up with cold, and become hard-hided, lose all their good, mellow qualities, and wrinkle up like a Merino sheep, and cost more feed for heat and make little or no growth.

Breed—Select according to surroundings and market, but always breed to pure blood. Boar—Use boar that is not too young. Indeed, does not common sense forbid the too early use of domestic animals for reproduction, as sure to entail loss of vigor and constitution? Especially with young sows use a boar a year or two old. Give to all plenty of room and pasture as soon as weather will permit,

not forgetting one good feed of ground corn and oats per week, but in winter, little or no corn, fat not being wanted, but strength, vigor, and a good yield of milk for the sustenance and thrifty growth of litter.

In the hog pen, as in all farm buildings where stock is kept, I use freely of that great enemy of all impurity—carbolic acid.

Now, a question: Shall I raise hogs successfully? Perhaps some of our successful breeders, whose experience has been paid for and is now attested by their success; practical men, in short, not theorizing on what ought to be, but rather showing what has been, may contribute something to be noted with interest on this to me and many others.

DISCUSSION.

Mr. Oyler, Russiaville. The question is, whether we can raise three litters of pigs in one year. The pigs should suckle ten weeks. When that is the case I hardly think three litters could be successfully raised. If we give them the privilege of raising two litters I think that is about all we can get out of them.

Mr. Hamilton—112 days is the time for a sow to go from conception to farrowing. In four days after farrowing she will come in heat again, but she will not always come in pig again. She will suckle pigs when in pig. I have generally noticed that a sow will come in in twenty-one days and suckle the pigs right on. I think three litters may be raised by close work, but perhaps it is not profitable.

W. A. Maize, Sharpsville—It would keep a sow too busy to raise three litters a year to be profitable.

L. W. Hamilton, Sandusky—It would keep her pretty busy, at least it is my opinion it is not profitable. I would rather have one litter; it would be stronger and better; we are after fancy; but on the other hand they want more hogs and more money and overdo the matter. A sow would not last long if she were rushed in that way.

J. H. Bebout—Is there any one here who has raised three litters in one year?

Mr. Smith—I never raised three litters but one of my neighbors who has a half-blood Jersey Red did. [Laughter.]

Joe Cunningham—Mr. Smith's argument recommends sandy boards for pigs. [Great laughter.]

Jasper Heck of Waldron, presented the following address on

“WHAT IS THE BEST MODE OF FEEDING FOR MARKET?”

In feeding hogs for the market, I would endeavor to breed my own pigs, instead of picking them up from various localities thereby hazarding the chances for disease.

I would begin with having a well established breed. Next to health, the digestive and assimilative powers of a pig is of the greatest importance. The pig must have a stomach capable of digesting a large amount of food, and the process of assimilation should be equal to the capacity of the stomach. In a well established breed these qualities are more likely to obtain, “like produce like” not only in form and color, but also in those qualities which determine thrifty growth, early maturity and a disposition to fat easily. To obtain the best results, the pigs should

be farrowed early in March. The sow should be placed in a good, warm, dry and well ventilated pen, with glass windows so arranged as to admit plenty of sunshine and light.

A well-constructed pen not only conduces to health but saves feed, and the saving of feed saves digestion. Give the sow all the slop she will drink, but very little grain for the first week after farrowing. There is nothing better than skimmed milk not too sour with middlings and corn meal added. Do not be afraid of having her too fat before farrowing nor of feeding her too liberally after the second week for all the accumulated fat, and that to be derived from the food, will soon find its way into the little pigs.

The sow should have the liberty of a grassy lot with plenty of fresh water to drink and her feed should be so varied as to induce her to eat the greatest amount. When the pigs are three weeks old, a little shallow trough should be placed in one corner of the pen where the sow can not get at it, then put in a pint or so of the new milk and take a little pains to learn them to drink; if one drinks the others will soon learn by example. Continue to give the new milk for two weeks but be very sure to wash the trough each time before feeding, if not they will be very likely to take the diarrhoea and thus retard their growth. If a little sugar be added to the milk it is said to improve the results, but I have never went farther than new milk fresh from the cow, which seems to work wonders in a very short time. You may think this too much trouble, but the future growth of the pigs depends upon their treatment while young.

The pigs should be allowed to run with the sow until three months old. In the meantime they should be fed liberally with wheat middlings and cornmeal mixed, or equal parts of oats and cornmeal slightly moistened with milk or kitchen slops, with a few ears of corn thrown them after they have eaten their regular meal. Too much water in the feed retards digestion. In fact, I believe better results can be obtained from feeding ground feed in the dry state than feeding it too wet. The process of digestion begins after the separation of water, while the dry feed comes directly in contact with and is thoroughly masticated by the gastric juices at once.

After weaning the pigs should have the run of a good clover field, and if fed liberally with old corn they will not only gain much faster in flesh, but their digestive powers will be increased to such a capacity as to enable them, as they approach maturity, to digest a greater amount of concentrated food. By the first of September, or as soon as the new crop of corn is in good roasting ear, I would begin to feed it either by cutting up stalk and all or turning them directly in the field. If you have a good dry field, and not too large, they will not waste enough to pay for gathering. At the same time let them have a good supply of pumpkins, with plenty of pure water to drink, and the run of a good clover field, with free access to a mixture of charcoal, sulphur, saltpeter and ashes.

Pigs fed and cared for in the manner described should weigh on an average, at the age of ten months, not less than 300 lbs., and at present prices for pork would give forty-eight cents per bushel for corn fed, to say nothing of the value of the manure.

DISCUSSION.

James Mustard, Marion County. I think it is an excellent paper. Still there is one thing I would speak of, and that is, if we breeders would practice and use common sense in the matter we would not sustain such heavy losses as we do. It is all right to have pigs come in March, but if they get the feed mentioned in that paper they will get fat and die of indigestion. I would give water, exercise and no slop the first week; would not be particular about giving slop the second week. It is well enough to know these things in order that the pigs may be properly handled. I would give the sow water and a little corn, and watch the pigs closely, and if they fatten up I would cut the feed, but by all means give them plenty of exercise, as it is essential. I had one sow which never could raise pigs until late in the season. When she was bred early the pigs would get fat and die. A poor pig never thumps around, it is always the fat ones.

Mr. Apple, Marion County. My experience is, there is danger of getting the sows too fat before having pigs.

I. N. Cotton, Traders Point. This subject covers a wide field. The question is "What is the best mode of feeding for market?" but we want to know what is best to feed, to feed right in starting out. I would like to hear the experience of some of these gentlemen on this point. My experience is that when my pigs come in the spring I carry them on until fall in a good thrifty condition, and when I commence feeding I feed carefully and not too heavy at first. A young pig, if you start it too rapidly, will get too fat and never develop right. There is one trouble of disease. We run our hogs through on grass during the summer, and when new corn comes in we feed it to them to pay up for lost time. There is more feed in an acre of corn in the roasting ear than any other time. If I had 1,000 bushels I would cut soft corn and commence on the hogs and bring them up gradually. If we rush them they often have disease. When those grasshopper hogs were shipped in from Kansas and about 3,000 were fed right around my farm, one man had them to die by the hundred, which nearly broke him up. They were not used to strong feeding and were rushed for all there was in it. They were nearly starved to death. Another man who had a lot feeding, commenced by giving a little at a time and he got them through.

Joe Cunningham, Bunker Hill. I would say with what little experience I have had with a young sow, I have never seen one too fat. Old sows sometimes get too fat and become careless, indolent and crush their pigs by lying on them. If you can save the pigs until they are three or four days old they are all right after that. When a sow is fleshy and aged they require attention to keep them from lying on the pigs, but if she is not fleshy she is more careful, and a young sow is always careful. I do not agree with Mr. Heck about giving the sows feed for the first two weeks after farrowing. If we feed too heavy the first week the pigs will take the thumps and die. In regard to feeding pumpkins I will say, from my experience, if we throw out too many of them to breeding sows we will have trouble, especially if the seed is in them. Pumpkins for market hogs are all right. While there is not much fattening quality in them, they are an excellent appetizer. I know of

several instances happening in our part of the country where pumpkins were fed before coupling time, and the sows failed to get in pig. I lay it to pumpkins. I never saw young sows so fat but what they would save their pigs.

Dr. Collins. I come to the meeting to hear this question discussed. There is much now being said in the papers about this question of food. Prof. Henry, of Wisconsin, is experimenting on food and testing feeding bran in slop, and also dry, and finds that dry bran is better. Some of our hogs have not been doing well and it seems to me we have fed too much. I have been examining our agricultural books in hopes that I might learn something of value. I would like to hear Mr. Reveal, as I presume he has some practical ideas on this question. Corn and bran make a good feed to get fat, preventing hogs from getting over fed. If you turn hogs in a pen they will do well for a few weeks, but after awhile they will root in the ground. They are then after lime alkali, which they do not get in corn. If they had ashes it would be better.

T. M. Reveal, Marion County. I much prefer hearing the experience of others. If desired, however, I can give a little of my practical experience, but I could tell you better if I were on my farm. In regard to having a young sow too fat, I never saw a young sow too fat if properly cared for. No corn or cornmeal should be given for three weeks before farrowing. An aged sow should not be very fat, but in good condition before farrowing. Young sows don't take on fat inwardly as do aged sows. The system should be in the right condition, and if they are on grass there is not much trouble in this respect, but if fat before farrowing in cold weather, if we give feed that is of a heating nature, such as corn, they do not do so well; but if we give slop and bran they would do better. If they were feverish and constive they should have something like cracklings or lard, and with such treatment I have had good results. As to feeding after farrowing, I would not give anything but water (but not too cold) after farrowing, if the sow is fat, for thirty-six hours, or, perhaps, forty-eight hours. Dr Collins speaks about hogs rooting, which is right. They are not to be blamed for rooting, for they are built that way. It is the owner's fault. Since the country is settled up they put them in small lots and they become discontented and will root, but if they have a range they will give little or no trouble in this respect. When my hogs go to rooting I fill their noses full of rings which generally is effective. If we would occasionally give our sows charcoal, ashes, soft soap or soda, and a variety of feed, it would be beneficial. We should see how well we could care for them. We must give a variety of feed, and it would take me quite a while to tell you what I give. If you treat your hogs right I will guarantee that they will not get to rooting, but if you neglect them they will turn the sod for you. Nothing pays so well as hogs, for they pay off more mortgages than all other kind of stock.

I. N. Barker, Boone County. There is such a thing as overdoing the matter with corn, and I think I have had as good success in keeping hogs up as anybody. The cheapest feed is ripe pumpkins with corn. Cooked potatoes are also excellent to feed in connection with corn. In feeding pumpkins don't throw out a wagon load a day, but put out only what they will eat. Sweet apples are also good, but don't feed sour ones. Hogs need something of this kind during these long cold winters, when kept fed on corn. I give my hogs plenty of range in the field.

Dr. Collins. Suppose you were feeding twenty, thirty or even one hundred head of hogs, the ground was frozen and it would not do to turn them in the field, could you name something which the large farmer might feed for a change? Would bran, oil meal or oats do?

T. M. Reveal. I have found a good thing in the mangle beet. It takes but a small patch to afford several tons of roots, that can be cooked or fed raw. Oats are a good substitute and bran answers in part. I find potatoes are an excellent substitute and may be fed either raw or cooked, and, with some oats, corn, beets and bran, hogs do well. I give a variety of feed for any amount of hogs I have.

James Mustard. The Doctor wants to know what the common farmer wants so he can reach out his hand and take it. Hogs sometimes don't take hold and eat with a relish as at other times and we find corn left. It is a pretty sure sign they are constipated. We should then feed bran or shorts. You must keep the bowels in good condition by feeding charcoal and ashes.

Mr. Oyler. Mr. Mustard speaks of feeding bran. Would you feed it dry or wet?

Mr. Mustard. I feed wet.

Mr. Oyler. My observation in feeding is, if the proper care is taken to give shade and plenty of lime and salt, they can not feed too much corn.

Joshua Strange. In feeding raw potatoes, especially in the winter, when the hog is stalled on corn, is not it an appetizer to aid digestion?

Mr. Reveal. It takes the place of vegetation in summer.

Joshua Strange. Ground corn and cobs has been fed successfully, and equally so with cob included as with cob excluded. Has any one had experience in that? If it is an advantage we want to avail ourselves of it.

On motion the following committee was appointed on programme: Messrs. W. H. Morris, Mintz, Maize, Shawhan and Mugg.

Convention adjourned until 7:30 P. M.

EVENING SESSION.

President Clark called the convention to order.

G. F. Ulrey, of Liberty, read the following paper on—

“CAN A BREEDER DISTINGUISH HIS HOGS WITHOUT ARTIFICIAL MARKS?”

I thought when the subject was assigned me I could see a smile lurking on the faces of the veteran breeders, indicating, “We know what he will say; he raises only a few hogs, and can easily distinguish them without a mark, but just wait until he has a couple of hundred little fellows as much alike as two peas, then see what he will say.” Now let me say that by the first of last May we were blessed with two hundred and eighteen young pigs, every one squealing for a distinguishing mark, and we gave each “a Dana ear tag,” for, while I fed them every day, it would have been impossible for me to tell where each one belonged. First here and then there would be one that would grow beyond recognition, and the older it grew the worse it was. But even if we did know our pigs without a mark, it is

certainly more satisfactory for the purchaser to know that we have some established mark that we can tell beyond a doubt. To illustrate this, I visited a breeder once that used no distinguishing mark. A pig was driven out. The breeder said the pig was bred so and so. Then, with a puzzled look, said, "No; let me see, that is not its breeding; it is bred so and so." I was satisfied he did not know himself how it was bred. I believe it possible for a breeder to know his pigs where he has them arranged in small lots and feeds them himself every day; but it is almost impossible to do this. Business may call him away for a few days, or sickness may prevent him from seeing them for a week or more, and in this time his pigs may change so he can not place them. So you will see at once that is a matter of necessity that you have a distinguishing mark. Now, the next question is what shall that mark be and where shall it be placed. Every one will admit that the ear is the most convenient place, and as it appears to be as useless for bacon as the tail, it has been the especial delight of pig owners, time immemorial, to cut, punch and disfigure the ear as best suited their taste. Well do I remember when a little boy, how the farmers in my neighborhood would have their semi-annual round-up, to place their private mark upon the pigs before turning them into the woods to "root, hog, or die." Some would cut in the ear what was called swallow-fork, under-bit, upper-bit, crop-off, etc., while the last to get a copyright in his neighborhood would have to whittle off the most of both ears to get something different from the rest. But now, with the ear counting a certain number of points on the score card, we must use a mark that will not disfigure the ear, and what this shall be has been a perplexing problem to the most of us. If we punch a hole in the ear it will grow up; if we cut a notch, the pigs will, in fighting, tear other notches so we will get confused with the marks. If we use the button, they are easily torn out, leaving a ruined ear. The last resort is the "Dana tag." But some will say it is easily torn out, is too large, will pull the ear down. But I can say candidly, after ten years' experience, that it is decidedly the best mark I have ever used. If you come up to our farm I can show you a number of aged hogs who have carried the tags ever since they were pigs, and not in a single instance have I ever lost a tag or had an ear damaged by their use.

DISCUSSION.

D. L. Thomas, Rush County. I was very much interested in the paper. The conclusions are that men are differently constituted. Some men can not distinguish their hogs from others in many cases without some artificial mark, while there are other men who would take a lot of fifty pigs to select from and select correctly every time. I have tried the Dana ear-tag and do not like it. Hogs get to fighting and will tear out the tag. When they lie down they get mud under them between the ear and keep the ear sore. If you want pigs to do their best you must make them comfortable, for when rings irritate the nose or ears they do not do so well. I prefer in place of the Dana tag to take a punch and cut a niche in the under edge of the ear, close to the head, and two niches for another leader, and so on, and make a memoranda of them.

J. Strange. There is a custom in the old country of marking stock which works nicely, and if we could establish it in ear marks, and apply a rule by recording the marks placed in the ear, it would be a good thing. The English have a rule for marking the ear, and they can go any time to the flock of sheep, though these sheep may be imported to this country. You can draw a diagram and send back to the breeder of the sheep where recorded and he will tell you the breed of that lamb. You know the kind of punch we use in placing ear-tags, with it make a little clip on the left ear, which counts one, and so on until you get ten on one ear, then you take the other ear of another litter and run right around on that, by this method you can keep each litter marked separate, and refer by record to them and tell where each pig belongs. If every other vestige of record is lost they can refer to this record and tell just the breed of that animal. For instance, we could get up some uniform system of marking certain sows by certain marks, and if we had this index we could refer to those marks and go to the book and tell what his breed was, and have it catalogued.

Mr. Claphan. It would be quite a job to cut all these marks, and further, what would an expert do with them? They value the ear a nice thing. I think the mark would need be quite shallow, so as not to injure the appearance.

Mr. Strange. It is a neat mark and don't disfigure the sheep or pig.

Mr. Claphan. When you mark the ear in that way if the mark don't grow larger it will grow out and disfigure the ear.

Mr. Foust. I have had some experience in marking hogs. About two years ago I noticed in the Swine Breeders' Journal a shoe punch, which I consider an excellent instrument for the business. Heretofore my marks had showed greatly. This time I cut a notch which don't disfigure the ear. That way you can cut all around the ear, indicating what litter, and you have a substantial mark which don't disfigure the ear at all.

J. W. Pierce, Peru. In traveling over the State the past season I have discovered a wonderful growth of rag weed. Do you think this rag weed, having grown to such enormous size would have a tendency to make hogs cough?

I. N. Barker. I am not prepared to entertain an audience like this with anything that would enlighten them on this subject. I have nothing to say about rag weeds, but I know there were plenty of them the past season. They came up and grew in our pastures where we had good white clover. The weed eradicated the clover. Bees scarcely made honey enough to live on. Where that clover was eradicated up came the weeds, and the eradication of the clover gave the weed a more vigorous growth. I do not know as it has any effect on hogs in the way of giving them a cough, at least I do not know that hogs in our locality have been troubled in that respect.

James Mustard. I have no speech for you to-night, but I will say I do not have rag weed and my hogs cough. I used the mowing machine on my weeds and that is the reason I do not have them in the fields. In the woods pasture it is railing and rag weeds don't grow. They would grow in the fields, but I don't allow them to. The pollen falls on the hair and the hogs don't look well. I would not let them run in it at that time of the year.

I. N. Cotton. I do not know that I have any fight on that question. I have noticed no serious effect from hogs running in rag weed. This coughing among hogs is similar to hay fever in the human family, it is sneezing with us. I doubt whether by cutting it is of much benefit. Dr. Brown says these rag weeds are a blessing to us, adding protection to the soil after cutting wheat. I find my ground in better fix with that shade, and will produce better corn and better hogs. I cut a little last season where I had wheat, and I find that the clover was not so good as where the weeds were left standing; the heat of the sun seem to have killed it. Whether a man gets pay for his work in cutting them down I have my doubts. It don't seem to effect the next year's crop of seed.

The following subject was introduced for discussion :

"WHICH IS BEST TO USE ON A HERD OF SWINE, AN OLD OR YOUNG BOAR?"

Mr. Reveal. I think that would be owing to circumstances. If we have young sows to use we should use a young male, if old sows we should use an aged male. Some of our finest hogs were got by young males. There is none finer than Tom Corwin, second, who was got by Star of the West when but nine months old. There are other fine hogs sired by boars not two years old. The Poland China has been bred up until he has become the greatest hog on earth from young stock, and has probably more vitality than any other. I am using a boar this year that is seven years old.

Mr. Foust. I have not had experience enough in breeding hogs to know which I would prefer, an old or young male, for practical purposes. I get better results from boars one year old and older than from young males. If you could get from a pig uniform litters I would prefer them instead of a year old all the time, but this we can not always do. I have observed, further, that as a boar gets to be two or three years old we can depend on him more. I am little of the opinion of some of the Shorthorn men in regard to their bulls that if we get a good boar that is doing good service we should keep him a good while.

Mr. Cunningham. I will say that I agree with Mr. Foust and Bro. Reveal in some respects. I have not had much experience in the boar business, but what little experience I have had my best results have been with boars one year old. In nine cases out of ten our best hogs in our show rings are out of young sows and young boars. Once in a while we get one out of an old boar, but it is altogether in the management and handling and breeding at the time with our pigs. We take a young boar and turn him out and breed him to two or three sows a day, which is taxing him too strongly; we should not breed too much. It is all in our judgment in keeping and handling, and, as I said before, I prefer young animals. If you take an old boar and cross with a young sow you get better pigs than if both were old, and it is the same with an old sow and young boar. I have a certain way of keeping my boar; there is much in the keeping and handling. I let him go to the sow but once, which I think is sufficient, and to that boar I feed milk; let the children cry and the boar have the milk. [Laughter.]

Mr. Barker. I do not want Mr. Cunningham's remarks to pass without criticism. It is not true that nine-tenths of our show pigs are from young animals. I think the best pigs are from matured stock. Young animals do make good stock, but not in the ratio of nine-tenths.

G. W. Thomas. I prefer good constitution; it don't make so much difference as to age.

Mr. Morrison. From what little experience I have I believe I can get good pigs from young sows if matured, but as far as the boar is concerned I would rather have a one year old, or older, than a young animal.

Judge Shepherd. It seems to me, gentlemen, that it depends more on the condition of the hog than the age. If you keep him vigorous and in good health, and not overwork him, I think after nine or ten months old he will breed as well as at seven years, two years, or one year. It depends very much on the condition of the boar and the sow. Take a boar ever so vigorous and the sow going down hill, the pigs will be weak and have no vitality. If it is wrong to send out young males to customers it should be stopped, but if they do well the customers will do well. I use young hogs, and prefer to have a hog a year o'd than older. If a young hog is not overtaxed he is just as good as an older one. Another thing, take a wild hog and they are near a year before they come to themselves. Take any class of animals and crowd them every day from their birth they get their growth earlier, when you get size, which you can by heavy feeding, you have sufficient maturity to impart to the young. It depends so much on the size and vigor of the animal after reaching a certain age. I have tried old and young boars, old boars on young sows and young boars on old sows, and I think young animals do quite as well as older, if conditions and vigor are good.

Mr. Strange. Did you mature the entire litter of pigs under your care?

Mr. Shepherd. I never observed any difference between young sows and old sows after twelve months old. I would rather have a sow at ten months old than twelve months, or one fourteen or fifteen months old than one twelve months old. At twelve months of age she is loosing her teeth. As to the number of "runts" in the litter, I never had any more trouble in that respect with young sows than old ones. I have noticed that teats used by pigs the first litter will keep having milk, while those that do not have milk the first litter never do. As to young sows having pigs, I believe it is a settled fact that the Poland-China breed has largely grown up from young sow pigs. Many years ago, while traveling over Butler and Warren counties in Ohio, I found but two yearling boars and but one boar over one year old, (I think he was two or three years old); and in all my travels I found not to exceed twelve aged sows. But on every farm they were breeding gilts. I made some inquiry about it, as to why they did not take old hogs. They said it was the custom to use gilts and feed the old ones for market. So the breed was built up on gilts, young stock, both boars and sows. In 1873 I made another trip to Ohio, and noticed many old hogs were kept over. I also noticed those breeding sows that were kept that breeders had a large number of pigs and uniform litters, and had been successful in selling their pigs, and the advantage they derived from that was one season selection and testing her breeding

capacity by the first litter. That is the course of the valuable and original Poland-China hog. It had some effect on the vigor, or it never would have developed such a hog. They selected the largest gilt and the most vigorous and growthy young boars and united these two, year after year, and selected the best pig all the time, and for twenty years that course was pursued in the Miami Valley, and the results are desirable ones to obtain. There is a marked change in color, but the older breeders present who have gone to the Ohio Valley for breeders will testify that we do not find hogs any more healthy than in those days. Any young man who buys stock will buy young stock; he will buy young sows and young boars. If it is wrong, if the breeders are imposing on young breeders, they should not do it. You hardly ever hear of one coming to you but what buys young sows. If it is not good policy your actions are belieing your words.

J. Strange, Grant County. When I wrote this query it was to bring out this thing. Judge Shepherd's remarks are scientific facts and not mere theory. That is the way that we obtain early maturity, by selecting that which develops greatest in the shortest length of time. Now, in the method of improving stock, it has become a scientific fact that in the young we can judge from its form just what it will bring when it becomes aged, and what it will be. My experience in breeding hogs has not been for selling stock for breeding purposes, but maturing them for market. We want to go to the fountain-head to get stock, and we want to mature them for the immediate market. I do not want a runt in the litter. If I have a sow that brings uniformly nice pigs I would retain her as long as she proved profitable. I prefer mature boars, say one and a half to two years old. They will produce stronger pigs than young ones.

Mr. Bebout. Did you ever have a litter of pigs that did not have the scours?

Mr. Strange. I was not troubled a particle with that. To get muscle and make good meat I want them to have grass. It develops them.

Justus C. Adams, Indianapolis. Last season my hogs were not doing well. A friend of mine told me to feed them soft brick, and another recommended slack coal. I gave them coal, but it did not seem to help them. They seemed very much constipated.

Mr. Mustard. What time, Mr. Adams, did you feed this slack coal?

Mr. Adams. This last fall.

Mr. Mustard. When hogs run on clover it loosens their bowels; let them go to the slack coal then, it keeps them right; but if you feed on dry feed it will serve them just as you say. It was the worst thing you could have done. Don't feed black coal when your hogs are not running on clover. If they get to rooting in the ground, and don't have a good appetite, feed soda to sweeten the stomach.

J. M. Aspey. I want to know more about the scours.

Lloyd Mugg, Howard Co. I have had much experience with pigs having the scours, and have lost money. I have raised a few that never had it, but the majority of pigs do have the scours when young. I have some times thought it was caused by trying to grow too fast. I have often thought the sooner it come the better.

J. Cunningham. I never raise a litter of pigs without them having the scours, and I am of the same opinion as Mr. Mugg, the sooner they have it the better.

I have always tried to take good care of my pigs, and never have lost many from that complaint. Whenever the pigs begin to show signs of scours, I check up on the feed, and feed only a little bran, shorts and water. If they don't quit then, I would feed flour in water until it checks up. We should notice our pigs often to ascertain the condition in which our pigs are in this respect. It is not very often we have sows in the spring fed on rich food but what the pigs more or less will have the scours.

Mr. Hollingsworth. At what age do these pigs take the scours?

Mr. Cunningham. My pigs run from two to four weeks.

Mr. Hollingsworth. I seldom get a litter of pigs through without them taking the scours. They begin having the scours in a few days after they begin cracking corn, and I have come to the conclusion that that is what starts it. They are not strong enough to digest this corn; they first become bound in the bowels, which is followed by the scours.

Mr. Strange. How often do you feed during the day?

Mr. Hollingsworth. When we get them through the scours I quit giving feed to the sow and feed the pigs, and feed them very often three times a day, a small amount, but generally twice a day.

S. M. Shepherd. Pigs are very much like infants—they are troubled in this way when cutting teeth. The best thing I ever tried in the way of effecting a cure is to take milk, scald it and beat an egg with it; let them eat that. Scorched flour is also excellent for the bowels of a pig; it has a soothing tendency. The first indication of the presence of scours is, the hair grows the wrong way. I think the cutting of their teeth is generally the cause of it.

Mr. Claphan. Scour is caused by improper feeding. Sometimes we give them more than at other times, and this increase of feed will often give them the scours. A very effectual remedy is sulphur given to the mother, which may be administered by taking a biscuit and butter it, after which put sulphur on and she will eat it.

James Mustard. We say they have the scours, another thing is a remedy. As to this milk and egg remedy I will say that the egg should not be put in the milk when cool. If the pigs are too young to drink, give it to the sow; if that fails, give the sow copperas with boiled milk and it will never fail.

Mr. Bebout. I give soot; it will take only a few days to go through the blood and stop it.

J. L. Aspey. I have a sow which came in heat in November. I did not want to breed her then and she has never been in heat since. Will some one give a remedy that will bring her in?

Mr. Mustard. Give her red pepper and I think it will bring her around all right.

W. H. Morris, from the Committee on Programme, reported as follows:

1. Does raising one litter a year tend to produce barrenness?
W. H. Hughes, Brownsburg, Ind.
2. How should we cross our stock to secure uniformity?
H. C. Oiler, Russiaville, Ind.
3. Is it advisable to feed pigs for breeding purposes more than two feeds a day?
I. N. Barker, Thorntown, Ind.

4. Which is the better to use, an aged or young male? T. M. Reveal, Clermont, Ind.
 5. What is the best care for sow and litter? R. Thompson, Pittsboro, Ind.
For discussion, evening session:
 6. What is the best time for selecting and manner of preparing animals for the show ring? John Harcourt, New Augusta, Ind.; M. W. Clayton, Rigdon, Ind.; Cal. Husselman, Auburn, Ind.; Joe Cunningham, Bunker Hill, Ind.
 7. What is the proper size, texture and shape of the bone of the thoroughbred? Jno. Wilson, Poplar Grove, Ind.
 8. Is it advisable to crowd pigs for breeding purposes from farrowing time? Geo. Scott, Eagletown, Ind.
 9. In feeding for the market, what foods are the best to combine with corn? Garrett Wikoff, Groves P. O., Ind.
 10. How can we tell the age of pigs exhibited at fairs so as to know that breeders do not misrepresent the age of pigs shown? . . . A. J. Ross, Jamestown, Ind.
- Adjourned to meet at 8:30 A. M.

SATURDAY, JANUARY 26.

The Association was called to order by President Clark.

On motion of I. N. Barker, of Thorntown, the Association went into the election of officers, resulting as follows:

President—J. H. Bebout, Rushville.

Vice President—W. A. Maize, Sharpsville.

Secretary—J. W. Pierce, Peru.

Treasurer—John Harcourt, New Augusta.

Executive Committee—I. N. Barker, Thorntown; Lloyd Mugg, Center; J. Cunningham, Bunker Hill.

Dr. Elliott read the following paper on—

“WHAT IS THE PROBABLE CAUSE OF DISEASE OF SWINE?”

Mr. President and Gentlemen:

The subject of my paper is the cause of disease in swine. It is one of great importance to breeders of that class of domestic animals. The cause and prevention of disease in swine, more particularly the swine plague, called hog cholera, is at present, and has been for some time, receiving the attention of our most learned veterinary scientists, men who make contagious and infectious diseases their special study, and are supplied with the necessary instruments for making the most continuous investigations. Sketches of their researches and experiments have been given us at different times through the columns of our leading stock journals. They have found by microscopic examinations a germ or organism in the blood and tissues of diseased swine, which, if introduced into the blood or almost any part of the body of a healthy hog, will produce a similar disease. The origin of this germ is yet unknown. We will leave this in their hands, as we

think them eminently fitted to make such researches, hoping they will soon be rewarded for their labors. As my investigations have been more limited I will endeavor to give you a short history of a disease which frequently occurs in other domestic animals, and then note the similarity, which in many respects resembles the swine plague in character and effect. You are aware the so-called hog cholera or swine plague assumes different forms, presenting different symptoms, all alike fatal and destructive.

This disease is known as anthrax and anthracoid. It consists in a special and primitive alteration of the blood in which an organism termed *Bacillus Anthracis* is rapidly developed and propagated, and is more special to herbivora and birds, inoculations with the blood and tissues of animals which have died from it, induces both in man and animals a malignant form of inflammation called malignant pustules. For this reason it is looked upon and described as a truly contagious disease. It appears at all seasons but principally in the spring or during summer and autumn. It occurs as a sporadic epizootic or enzootic, attacking animals of any age—the fat, vigorous and plethoric, as well as the lean, feeble and languid.

Its history is very ancient, being known in Asia Minor at the period of the siege of Troy. In 1617 it was very prevalent and of such a fatal character in the neighborhood of Naples that over 60,000 persons died through partaking of the flesh of animals which had died of the disease. In 1731 it broke out in several of the provinces in France, and at different times extending from 1757 to 1800. It extended nearly all over France, and, although less frequent here than in many parts of Europe, it is quite as fatal in its character in the horse.

It rarely occurs in this country, but is prevalent in India, where it is said to attack the elephant as well as other domestic animals and is termed *loodiana disease*. In Africa it is called horse sickness.

The symptoms are: The animal appears dull and walks with a feeble step, then falls prostrate in a state of somnolence. But if standing, the head hangs down, resting on the manger, the body resting on the sides of the stall, when it finally becomes restored, looks to its sides and shows signs of colic. If at work there is extreme lassitude, with great weakness of the muscles of the loins, the gait is staggering, the skin is hot and slightly crepitates on the back with a partial trembling of the muscles; saliva flows from the mouth; great excitement now sets in, and the animal becomes unconscious of all surroundings. The breathing is labored and attended with a roaring noise; as these symptoms become aggregated violent colic sets in; there is convulsive movements of the head and neck, the nostrils become dilated, and clots of sorocity and blood escapes from the nose. The belly becomes swollen or tympanitic, and the excrement from the bowels is mixed with clotted blood. The disease terminates in from six to forty-eight hours, the ordinary time being from twelve to twenty-four. There are other symptoms which we may term external symptoms—such as eruptions and tumors on the skin. These tumors vary in size from a walnut up, and are painful to the touch; and if punctured a fetid gas is liberated, and a brownish black fluid escapes. These tumors are also found on mucous membranes, as the tongue and inside of the lips, their contents being both corrosive and acrid, which will destroy the surrounding tissues, causing ulcers in cattle.

The symptoms are very analagous to those in the horse. They suddenly get tired of their feed. Rumination is suspended. There are rigors; partial sweats; tenderness on pressure over the loins. If down, it makes many attempts to arise, but scarcely succeeds; but when standing the back is arched, the legs are stiff, it looks towards its flanks, and falls into convulsions, expeling from the bowels without much effort a soft and bloody matter. The belly becomes tympanitic, the mouth is filled with mucous, and blood escapes from the nose. In cattle above two years old, especially milch cows, the local lesions are confined to great congestion of the spleen, liver, and mucous membranes of the bowels. In rare instances the engorgement may be in the lungs, and should the animal survive for some days there is decomposition of the extravasated blood, which is evidenced by the breath becoming foetid. This decomposed extravasated blood is absorbed into the circulation, causing death by septicemia, or poison. These symptoms designate what is called apoplectic anthrax—splenic apoplexy or splenic fever. Now, there are other symptoms with external manifestations designating a form of the disease called gloss anthrax, blani, quarter ill, black leg, etc. It occurs more frequently in young cattle under eighteen months and two years, and terminates suddenly. Enlargements form about the loins, back, head, and brisket, or upon one or more of the limbs, in which case the animal is lame, the shoulder and neck becoming swollen to an enormous size, the bowels are constipated, urine scanty, and of a dark coffee color, convulsions take place, and they die in a state of coma. The swelling, when cut into, is found to contain serum and black colored blood. Decomposition speedily takes place and gases are evolved.

In sheep, it is known as bractuking of the blood, etc., they have the same arching of the back, impediment in walking or staggering gait, pain in the bowels, etc. The *post mortem* appearances are analagous to those in cattle, there being the same great tendency to rapid decomposition of the blood and tissues. The vessels are full of dark colored blood. Bloody froth issues from the mouth and nose, and sometimes from the bowels, which are distended with gases. In lambs, the fever is accompanied with external swellings the same as in young cattle.

In swine it is known as authracoid erysipelas, blue sickness and pig typhoid; some authors contend it differs in many particulars from the disease in other animals, the germs or organisms in the blood having a different shape, appearance, etc., but when we come to note the similarity of the symptoms we find the one and same disease. The gloss anthrax form is most commonly seen in the pig when it has fed on the flesh of other animals which have died of the malady. Then the tongue, larynx, pharynx, become enormously swollen and gangrenous; there is an exhaustive diarrhea with great tenesmus and discharges of blood prior to death. The tumors are found on the digestive organs, having the same pathological appearances as in other animals. In milder cases (not gloss anthrax) we notice the same similarity of symptoms, such as the loss of appetite, sudden prostration, sullen appearance, hanging ears, painful and haggard expression, and vomition of a coffee-colored fluid, continual convulsions, and paralysis of the extremities, rapid alterations in the heat of the body, with highly injected mucous membranes. We have another disease in the hog similar in its pathological appearances, which we call hog cholera. In Europe it is called pneumo-enterites, from affecting the

lungs and bowels, and also called typhoid fever. It is highly contagious and infectious, and it is to the symptoms of this particular form I wish you to note the similarity. There is loss of appetite, general prostration, hanging of the ears, a sullen appearance, the eyes are watery and the lining membranes red and spotted; red spots appear on the ears, abdomen and inside of the limbs; as the disease advances tremblings and convulsions are manifested, the animal grinds its teeth, the muscles contract. These are succeeded by paralysis of the hind limbs, or of the whole body; the urine passed is high-colored and even bloody; the bowels are at first generally torpid, but the foecal matter may be soft and mixed with very black foetid blood; diarrhea often sets in, the breathing becomes catching and convulsive; there is a painful cough; the animal wanders to and fro, falls down, kicks and rolls, and seems to be in pain. These symptoms are liable to various modifications, depending on the intensity of the fever and the various localization of the poison. In some cases the virus seems to expend itself upon the serous membranes, inducing peritonitis and pleurisy; sometimes upon the mucous membranes, as expressed by bronchitis and bronchial pneumonia congestion.

As to the cause or causes of this malady (termed anthrax), some authors claim it is due to influences of the temperature, to stagnant water, occurring more frequently in low, marshy lands, and from forage tainted with decomposing animal and vegetable matters, and from contagion. Others who have watched it closely almost unanimously conclude that in cattle and sheep it is due to dietetic errors, more particularly to sudden and violent changes in the diet; for instance, a sudden change from a poor to a highly nutritious one, and it is to this particular cause I would like to draw your attention. Animals that are poorly fed and roaming at large, or animals well fed and having plenty of exercise, if taken up, confined and fed on highly nutritious diet, or food rich in the elements of nutrition, the result of which is a rapid formation of blood highly charged with albuminous material which neither the tissue nutrition nor the excretory organs are calculated to keep in anything like its normal condition, the consequence is grave and serious changes occur by which its constituents become degraded and the system empoisoned.

It is necessary in the animal economy that every tissue and organ in the body must withdraw those constituents which are essential to their well being. Without this withdrawal from the blood of those constituents by the tissues and organs it soon becomes unfit for the purpose it is intended; and the same conditions when it is so rapidly formed that the process of tissue nutrition can not possibly eliminate or withdraw from it more than a half of its superabundant constituents. For example, the body requires within a given time a certain quantity of plasma for all the purposes of nutrition, growth, heat, the formation of fat, and what is eliminated, and within that period the quantity of that plasma far exceed those requirements, it naturally follows that the unused matter must accumulate in the circulation and there undergo such grave alterations as to become injurious to the animal economy and poison the blood; its power of absorbing and conveying oxygen from the lungs is modified, destroying the blood corpuscles, converting it into a proper habitat for the growth and development for low organism or germs which cause within it septic or putrefactive action, its vitality becomes destroyed,

and a condition is brought about in the blood similar to that which can be produced artificially by the introduction or inoculation of decomposing animal matter. When the blood is so altered by those changes it tends to accumulate in the blood vessels and soft tissues, such as the spleen, mucous membranes of the bowels, and in the lungs. Now, seeing that these conditions or changes in the life-giving element of the body are produced by these elements of nutrition due to high feeding and want of exercise, is it not clear to the mind of every breeder and swine dealer that the cause lays with himself?

Is not excessive interrelative inbreeding the primary cause of disease in swine? It is extensively practiced by the breeder, especially for the purpose of getting those fashionable points so much admired in the show ring. But what are its effects on the animal economy? We all know its effects on the human family, and it must have come on the lower animals. It has not been a success in the horse. They lack the power of endurance, are delicate, mincy feeders, and easily excited. In cattle it has its injurious effects, especially in the Jersey it is carried to a greater excess than in the other breeds, and no doubt is the great cause of abortion so prevalent among them, especially when the milk ducts are taxed to their utmost. With this excessive practice the organs of the body are degraded, and consequently weakened, their functions of secreting and excreting lessened, making them unable to fulfill the office which nature gave them in the animal economy. Therefore, they can not take up and use those elements of nutrition produced by rich diet, separate and carry off the effete or poisonous matter, the retention of which when carried into the blood empoisons it, and low organisms or germs of disease are developed. The escape of those germs, either through the lungs or from the putrefaction of dead tissues, sets up a similar disease in healthy animals making it contagious.

Is not the breeder, to a great extent, the developer of this disease? I mean the man who buys in large lots. He starts out in the spring, or summer, or in the fall, buys them here and there all over the country, brings them home, pens them up, and then the high feeding process commences. They get all the corn they can stuff down, and not being used to such high living, they eat greedily. Very soon their inbred digestive and other secreting organs become over-taxed, and what is the consequence? Why, their elements of nutrition are not properly disposed of, and the result follows as stated before. Exercise plays a very important part in maintaining the health in swine, as well as in other animals, and I can best explain that by relating an article I read a few years ago in the Farmers' Review, (the Texas Story), the Greencastle Story, and the Maywood Story.

James Mustard, the Treasurer, submitted his annual report, which was approved. On motion of I. N. Cotton, the books of the Secretary and Treasurer were ordered placed in the hands of the Executive Committee for inspection.

On motion the convention adjourned sine die.

POULTRY BREEDERS.

The first association of poultry breeders was formed in 1875, during which year the "Indiana Poultry Association" gave a winter exhibition which was successful in every way, and did much toward establishing the prestige of Indiana as a leading State in fine poultry, which has since been maintained and improved upon.

Soon after the above organization the State Board of Agriculture requested the officers of the Poultry Association to supervise the poultry exhibit at the State Fair, which was done to the satisfaction of both the board and exhibitors. In each succeeding year the officers of the State Poultry Association have assisted in the management of poultry exhibits at the annual State Fairs.

In 1879, on account of the great progress, both practical and scientific, in the breeding of poultry, and kindred branches, some changes were found to be necessary, and the Association was reorganized under a revised constitution and by-laws. During the exhibition held in January, 1880, the American Poultry Association, composed of prominent breeders throughout the United States and Canada, held its annual meeting in the City of Indianapolis for the first time. The American Association brought many exhibitors from all parts of the country, making this exhibition the largest and most important held in the State up to that time. The finest birds from all sections were exhibited, and it was found that Indiana was competing strongly with the best; causing Mr. Philander Williams, of Taunton, Mass., a veteran breeder, and Vice President of the American Association, to say in his address at the banquet given by the Indiana Association: "In looking over the exhibition now being held here by the Indiana State Society, we, from the East, are reminded that, unless we are up and doing, we shall soon be sending west for our breeding stock instead of sending across the water, as many of us have done in years past."

From year to year the poultry exhibits at the State Fair continued to receive care from the State Association, and a winter exhibit was annually held. Numerous county and district associations have been formed, giving regular winter shows.

In 1887 it was again found necessary to reorganize, and revise rules and regulations.

The first Annual Exhibition of this new organization was held in Indianapolis, January 18 to 25, 1888. The association was complimented by the American

Poultry Association holding its annual meeting in Indianapolis during the exhibition. This was the thirteenth annual meeting of the A. P. A. and the second in Indianapolis. This meeting of the A. P. A. was largely attended by its permanent members, many of whom are the oldest and most eminent breeders of fine poultry in America. The most important business before this meeting was the discussion of the revision of the "American Standard of Excellence," many changes being made and the title changed to "American Standard of Perfection." The following new breeds and varieties were admitted to the revised standard:

White Wyandottes, Golden Wyandottes, Jersey Blues, Black Minorcas, White Minorcas, Red Caps, White Javas, Pea Comb Plymouth Rocks, White Plymouth Rocks. The name, Wyandottes, was changed to Silver Wyandottes, and Plymouth Rocks, to Barred Plymouth Rocks. Rumpless, Frizzles and Pea Comb Partridge Cochins were stricken from the standard.

The headings of the standard were changed to read male and female, instead of cock and hen. The new standard is classified as follows:

CLASS 1—AMERICAN.

Plymouth Rock, White Plymouth Rock, Silver Wyandotte, Golden Wyandotte, White Wyandotte, Black Wyandotte, Black Java, White Java, Mottled Java, American Dominique, Dirigo, Jersey Blue, Erminette.

CLASS 2—ASIATIC.

Light Brahma, Dark Brahma, Buff Cochin, Partridge Cochin, Pea Comb Partridge Cochin, Black Cochin, White Cochin, Langshan.

CLASS 3—MEDITERRANEAN.

White Face Black Spanish, White Leghorn, Brown Leghorn, Dominique Leghorn, Black Leghorn, Rose Combed White Leghorn, Rose Combed Brown Leghorn, Andalusian, Black Minorca, White Minorca, Ancona.

CLASS 4—POLISH.

White Crested Black, White, Silver, Golden, Buff, Bearded Silver, Bearded Golden, Bearded White.

CLASS 5—HAMBURG.

Silver Spangled, Golden Spangled, Silver Penciled, Golden Penciled, Black, White.

CLASS 6—FRENCH.

Houdan, Crevecœur, La Fleche.

CLASS 7—DORKING.

White, Silver Gray, Colored.

CLASS 8—GAME AND GAME BANTAMS.

Black Breasted Red, Brown Red, Golden Duckwing, Silver Duckwing, Red Pile, Black, White, Pit, Black Sumatra; Black Breasted Red, Brown Red, Golden Duckwing, Silver Duckwing, Red Pile, Black, White.

CLASS 9—BANTAMS OTHER THAN GAME.

Golden Seabright, Silver Seabright, Rose Combed White, Rose Combed Black, Booted White, Booted Black, Pekin, Japanese, Polish, Malay.

CLASS 10—MISCELLANEOUS.

Red Caps, Sultans, Silkies, Fur Fowls, Russian, Malay, Indian Game, Aseel, Yokohama, Dimon, Creepers, Texas Bunties, Scotch Greys, Courtes Pattes, Barbezieux, Breese, Caussades, Mans, Barbus d'Anvers, Coucous de Malines, and all other varieties not mentioned above.

CLASS 11—TURKEYS.

Black, Bronze, Buff, Narragansett, Slate, White, Wild.

WATER FOWLS.

CLASS 12—DUCKS.

Pekin, Rouen, Aylesbury, Cayuga, Black East Indian, Crested White, Gray Call, White Call, Colored Muscovy, White Muscovy.

CLASS 13—GEESE.

Toulouse, Embden, White Chinese, Brown Chinese, Egyptian, African, Wild, Sebastopol.

CLASS 14—ORNAMENTAL.

Pea Fowls, White Guineas, Pearl Guineas, Golden Pheasants, Silver Pheasants, Amherst Pheasants, English Pheasants.

To those not familiar with the "Standard of Perfection" some explanations as to the method of deciding the merits of a specimen, descriptions, scale of points, etc., will be of interest. In each variety both "male" and "female" are carefully described as to what would be regarded necessary points. For this description the parts are taken as follows: Head, comb, wattles and ear-lobes, neck, back, breast and body, wings, tail, fluff, legs and toes.

“Disqualifications” are also given, that is, such defects as will show a specimen to be not pure bred, or having any other serious defect. For instance, in Plymouth Rocks, Leghorns and other smooth-legged birds, feathers on shanks would be a disqualification, while Brahmas, Cochins and other feathered-leg birds absence of feathers on outside of shanks and outer toes would be a disqualification. Other disqualifications are crooked or otherwise deformed combs, crooked back, wry tail (twisted or falling to one side), color other than that required by the standard, weight falling too much below that required by the standard.

- The cock is a male bird over one year old.
- The cockerel is a male bird under one year old.
- The hen is a female over one year old.
- The pullet is a female under one year old.

STANDARD WEIGHTS.

	<i>Plymouth Rock,</i> <i>lbs.</i>	<i>Brahma,</i> <i>lbs.</i>	<i>Langshan,</i> <i>lbs.</i>	<i>Wyandotte,</i> <i>lbs.</i>
Cock	9½	12	10	9½
Hen.	8	9½	8	6½
Cockerel.	8	10	8½	7½
Pullet.	6½	8	6½	5½

SCALE OF POINTS AND SCORING.

The scale of points varies in different varieties, but the total is always 100. A separate score card is used for each bird, and the exhibitor is entitled to this card, when signed by the judge. To become an expert judge of poultry requires long study and close observation.

SCALE OF POINTS AND SPECIMENS OF SCORING.

SCALE.	PLYMOUTH ROCK COCKEREL.		LIGHT BRAHMA HEN.		BROWN LEGHORN PULLET.	
	Points.	Outs.	Points.	Outs.	Points.	Outs.
Symmetry	8	½	8	½	8	1
Weight	6	...	6	...	6	...
Condition	6	...	6	...	6	½
Head	6	½	6	...	8	...
Comb	8	½	8	1	10	2
Wattles and Ear Lobes	6	1	6	...	10	1
Neck	10	1	10	½	7	1
Back	8	...	8	½	7	...
Breast	10	1	10	½	10	1½
Body and Fluff	8	...	8	...	6	...
Wing	8	...	8	2	8	½
Tail	8	½	8	1½	8	½
Legs and Toes	8	...	8	...	7	...
Totals	100	5	100	6½	100	8
Total score . . . . .	...	95	...	93½	...	92

SECOND ANNUAL MEETING.

The second annual meeting of the State Association was held during the exhibition on January 24, 1888. After routine business and congratulations on having given the greatest exhibition ever held in the west, and thanking the A. P. A. for aiding in the grand success, the association proceeded to elect the following officers for the year 1888:

President, R. Twells, Montmorenci; Vice President, I. N. Barker, Thorntown; Corresponding Secretary, Major Griffin, Mauzy; Recording Secretary, E. A. Pierce, Indianapolis; Treasurer, D. H. Jenkins, Indianapolis; Executive Committee, William Tobin, Indianapolis; Charles A. Styer, Kokomo; Ben. S. Myers, Crawfordsville.

The poultry exhibit at the State Fair in September, 1888, was equal if not superior in extent and merit of specimens to any previous State Fair exhibitions. The season had been a fairly good one for the rearing of young birds, and although early in the season, there were a large number of fine well-grown young specimens competing for the State's cash premiums, which were satisfactorily awarded by Mr. D. H. Jenkins, of Indianapolis.

The second annual exhibition of the new Indiana State Poultry Association was held in Tomlinson Hall February 5 to 9, 1889. This exhibition embraced a bench show of about one hundred dogs, including many fine and valuable specimens. Ben S. Myers, of Crawfordsville, was superintendent of the bench show, and the premiums were awarded by Royal Robinson, of Indianapolis.

There was a large exhibit of high class pigeons, including many choice birds in the numerous varieties, especially in English and Antwerp housing pigeons (carriers). Prizes on pigeons awarded by Mr. George Ewald, of Cincinnati, O.

The principal large exhibitors in pigeons were R. Castenholz, W. F. Churchman, H. Priller and E. A. Dorsey, all of Indianapolis, to each of whom many prizes were awarded. Mr. Dorsey also exhibited a collection of rabbits, Guinea pigs and other pets, on which he was awarded prizes.

In poultry proper there were eleven hundred entries, the leading varieties being largely represented by many high scoring birds, as will be seen from the list of awards and scores herewith.

Entries in leading varieties were as follows: Plymouth Rock, 84; Wyandotte, 59, Light Brahma, 124; Dark Brahma, 6; Buff Cochin, 74; Partridge Cochin, 85; Black Cochin, 42; White Cochin, 15; Langshan, 56; White Leghorn, 36; Brown Leghorn, 54; Black Minorca, 59; Black-breasted Red Game, 18; other games, 18; Bantams, all kinds, 59.

The average of the scores in many of the classes was very high, and it will be noted from the premium list that many birds well up into the nineties did not get even fourth prizes, because there were others still higher carrying off all the prizes. On account of these facts the committee decided to give the exhibitors the benefit of the publication of the score of all birds, which will be found convenient for comparison.

The annual meeting of the Association was held in the rooms of the State Board of Agriculture on the evening of February 8, 1889, President R. Tévells in the chair. All the officers and a majority of the members were present.

The Secretary was ordered to prepare a report and submit the same, together with amended constitution, by-laws and list of members, to the Secretary of the State Board of Agriculture for publication in the State Agricultural Reports.

Hon. Sid. Conger, Flat Rock, William Tobin, and D. H. Jenkins, Indianapolis, were appointed a committee to solicit from the State Board of Agriculture an increase of the appropriation for poultry premiums at the State Fair, and also to ask that as soon as practical the Board construct on the fair grounds a more suitable building for the poultry exhibit.

The Executive Committee was instructed to select a competent person, and present his name to the State Board, requesting his appointment as Assistant Superintendent of "Poultry Department," with full charge of the poultry exhibit at the State Fair. Also to select an expert judge of poultry for the State Fair, to examine all entries and award premiums, and asking his appointment by the Board.

It was ordered that the Third Annual Exhibition be held in Indianapolis, January 14 to 19, 1890.

At the conclusion of other business, the election of officers was declared in order, and the following were unanimously elected:

President, William Tobin, Indianapolis.

Vice President, R. Twells, Montmorenci.

ADDITIONAL VICE PRESIDENTS.

I. N. Barker, Thorntown.

Cy. W. Neal, Marion.

D. Christian, Roanoke.

Ben. S. Myers, Crawfordsville.

B. F. Hill, Indianapolis.

Alonzo Tyner, Greenfield.

Henry Allen, Bloomingdale.

Recording Secretary, E. A. Pierce, Indianapolis.

Corresponding Secretary, Major Griffin, Mauzy.

Treasurer, D. H. Jenkins, Indianapolis.

EXECUTIVE COMMITTEE.

R. W. Crocket, Delphi.

B. T. Pace, Salem.

W. H. Fry, Indianapolis.

Members *Ex-officio*, Wm. Tobin, R. Twells, Major Griffin, E. A. Pierce, D. H. Jenkins.

CONSTITUTION.

ARTICLE I.—NAME AND OBJECT.

SECTION 1. This organization shall be known as the Indiana State Poultry Association.

SEC. 2. Its object shall be to encourage the interest and promote the improvement in the breeding and management of poultry, pigeons and pet stock, and to hold exhibitions in the city of Indianapolis at such times as shall be designated by the Executive Committee.

ARTICLE II.—OFFICERS.

SECTION 1. The officers of this Association shall consist of a President, Vice President, Recording Secretary, Corresponding Secretary, Treasurer, and an Executive Committee of three, with the President, Vice President, Recording and Corresponding Secretaries and Treasurer as members ex-officio.

SEC. 2. The officers are to be elected by a majority of all the votes cast at the annual meeting, and are to serve one year or until their successors are elected and qualified. Vacancies occurring during the interim are to be filled by the Executive Committee.

ARTICLE III.—MEMBERSHIP.

SECTION 1. All applications for membership shall be recommended by three or more members of the Association, to be ballotted on separately, after the payment of an initiation fee of five dollars, and upon receiving a majority of the votes of all the members present at any meeting of the Association shall be received as a life member.

ARTICLE IV.—MEETINGS.

SECTION 1. The annual meeting and election of officers of this Association shall be held during the time of the exhibition. Ten days notice shall be given to each member as to time and place.

ARTICLE V.—AMENDMENTS.

SECTION 1. Any amendment to, alteration or repeal of the Constitution and By-Laws of this Association must be presented to the Executive Committee in writing, who will present the same at any meeting of the Association, and upon receiving a two-thirds majority of the votes of all the members present shall be adopted.

ARTICLE VI.—PENALTIES.

SECTION 1. Upon any member failing to pay his dues, or being charged with willful misrepresentation, or dishonest or unfair dealing in connection with the poultry interest, or with any other conduct derogatory to the standing of the Association, the Executive Committee shall examine into the matter, and if it shall find the charges sustained, expel the offender.

BY-LAWS.

ARTICLE I.—DUTIES OF OFFICERS—PRESIDENT.

SECTION 1. The President shall preside at all the meetings of the Association, appoint special committees, call extra meetings at the request of three or more members of the Executive Committee, and exercise the usual functions of the presiding officer of a deliberate body.

ARTICLE II.—VICE PRESIDENT.

SECTION 1. In case of the absence of the President, or his inability to act, the Vice President shall act as the presiding officer.

ARTICLE III.—SECRETARY—TREASURER.

SECTION 1. The Corresponding Secretary shall conduct the general correspondence of the Association, and have custody of the same; he shall preserve all important letters received, and keep a letter-book copy of the answers thereto; distribute notices of meetings of the Association.

SEC. 2. The Recording Secretary shall keep the minutes of all meetings, and have charge of the books and papers appertaining to his office; he shall promptly notify all members of their election, collect all moneys due the Association and pay the same over to the Treasurer, taking his receipt therefor.

SEC. 3. The Treasurer shall have charge of all the funds belonging to the Association, and shall pay bills after they have been approved by the President; he shall keep his accounts in proper form for inspection of the Executive Committee; he shall make a report at any regular meeting of all receipts and expenditures, and shall give bond in such sum as the Executive Committee shall decide upon.

ARTICLE IV.

SECTION 1. The Executive Committee will hold special meetings, at the call of three or more of its members, four of whom shall constitute a quorum. It shall control the affairs and property of the Association at all times, and attend to all printing; give publicity to and secure suitable accommodations for public exhibitions; keep a record of all its transactions, and report the same at any meeting of the Association, when called upon.

ARTICLE V.—ORDER OF BUSINESS.

The Order of Business of this Association at all meetings shall be as follows:

Reading the minutes of last meeting.

Address and reports of officers.

Reports of committees.

Unfinished business.

New business.

Election of officers.

Discussions.

Adjournment.

PRIZES AWARDED AND SCORES.

Judges—B. N. Pierce and I. N. Barker.

LIGHT BRAHMAS.

John M. Rose, Liberty, Ind.—Cock, 94, 1st. Cockerel, 91½. Pullet, 93, 93, 92½, 92½, 92½, 92. Breeding pen, 93.375, 2d.

Chas. A. Styer, Kokomo, Ind.—Cock, 92½, 2d; 91, 4th. Cockerel, 93½, 3d, 91½, 90½. Pullet, 94½, 1st; 93, 92½, 92, 91. Breeding pen, 93.25, 3d.

S. D. Hostetter, Mace, Ind.—Cock, 91½, 3d. Hen, 90½, 4th; 90, 89½, 87. Pullet, 93½, 91½, 89, 88. Cockerel, 89.

W. R. Clore, Trafalgar, Ind.—Cockerel, 94, 1st; 94, 2d; 92, 90. Pullet, 93½, 92½, 92½, 91½, 91, 91, 91, 90, 88½. Breeding pen, 93.25, 4th.

J. B. Foot, Norwood Park, Ill.—Cockerel, 93, 4th; 92, 92, 90½, 90½. Hen, 94, 1st; 93, 2d; 91½, 3d; 88½. Pullet, 94½, 3d; 93½, 93, 93, 92½, 92½, 91, 90½. Cock, 90. Breeding pen, 93.375, 1st.

Major Griffin, Mauzy, Ind.—Pullet, 94, 4th; 93½, 93½, 92, 91½, 91, 90½, 90½. Cockerel, 90½, 89½.

W. P. White, Rushville, Ind.—Pullet, 94½, 2d; 94, 93½, 92, 92, 91, 91, 91, 90, 90, 88. Cockerel, 92½, 92½, 90½, 90½, 90, 89, 88.

Billy Bolinger, Pendleton, Ind.—Cockerel, 91½, 91. Pullet, 93½, 93, 93, 92½, 90½.

S. F. Gross, Atwood, Ind.—Cockerel, 91, 90, 89½.

E. M. McCaslin, Franklin, Ind.—Cockerel, 91½. Pullet, 93½, 92½, 91½, 91.

Jacob Norris, Crawfordsville, Ind.—Cockerel, 92½. Pullet, 92½, 90½, 91, 91, 91, 89½, 91½, 91½, 91.

P. S. Woods, Lebanon, Ind.—Cockerel, 88½. Pullet, 92, 91½, 91½, 90½.

DARK BRAHMAS.

E. M. McCaslin, Franklin, Ind.—Cockerel, 91½, 1st. Pullet, 90, 1st; 89, 2d; 89, 3d; 88½, 4th. Breeding pen, 90.31, 1st.

LANGSHANS.

Woodard & Sewell, Evanston, Ill.—Pullet, 95, 1st; 94½, 2d; 93, 93, 92½, 92½, 92½, 92, 91½, 91½, 90½. Cock, 94, 1st; 93, 2d. Cockerel, 95½, 1st, tie; 95½, 1st, tie; 93, 4th; 91½, 87. Hen, 94½, 1st. Breeding pen, 94.87, 1st.

B. T. Pace, Salem, Ind.—Cock, 93, 3d. Pullet, 93½, 4th; 92½, 92½, 91. Cockerel, 91. Breeding pen, 92.86, 4th.

Ben S. Meyers, Crawfordsville, Ind.—Cock, 90, 4th. Cockerel, 94½, 2d; 92½, 91, 92, 91½, 89½. Hen, 94, 2d; 90½. Pullet, 93½, 93, 92, 90, 89.

A. Tyner, Greenfield, Ind.—Cockerel, 93½, 3d; 92½. Pullet, 94½, 3d; 92½, 92½, 91. Hen, 93½, 92½. Breeding pen, 93.87, 2d.

H. A. Bradshaw, Lebanon, Ind.—Cockerel, 92½, 91½. Hen, 94, 3d; 94, 4th. Pullet, 93, 92, 92, 92½, 91. Breeding pen, 92.93, 3d.

Frank Farquar, Kennedy, Ohio.—Cockerel, 90. Pullet, 93, 92½.

BUFF COCHINS.

Dr. J. B. Harlan & Son, Danville, Ind.—Cock, 91½, 1st. Cockerel, 93½, 2d. Hen, 92, 4th. Pullet, 92, 91½, 91, 91. Breeding pen, 92.48, 3d.

Frank Fraley, Forest Hill, Ind.—Cock, 90, 2d. Pullet, 93, 4th; 93, 92½, 91. Cockerel, 92, 91½. Breeding pen, 92.48, 4th.

Mrs. S. E. Burt, Orange, Ind.—Cock, 87½, 3d. Cockerel, 92. Pullet, 92½, 91, 91, 88½, 89. Hen, 88.

J. D. White, Nineveh, Ind.—Cock, 86½, 4th. Hen, 95½, 1st; 94, 2d; 91½, 91½, 91. Cockerel, 92, 91½, 91, 90½. Pullet, 91½, 91, 91, 90½, 90, 88. Breeding pen, 92.56, 2d.

Clair Johnson, Rushville, Ind.—Cockerel, 93½, 1st; 93, 3d; 89½.

W. H. Jones, Liberty, Ind.—Cockerel, 93, 4th; Hen, 92, 3d. Pullet, 94½, 1st; 94, 2d; 93, 3d; 93, 91. Breeding Pen, 93.43, 1st.

H. L. Harlan, Crawfordsville, Ind.—Cockerel, 90, 89. Pullet, 91, 89, 88, 87½, 87.

C. C. Canary, Indianapolis, Ind.—Cockerel, 90. Pullet, 89½.

B. A. Richardson, Indianapolis, Ind.—Pullet, 88, 86½.

PARTRIDGE COCHINS.

J. B. Foot, Norwood Park, Ill.—Cock, 93½, 1st; 92½, 2d; 91½. Hen, 94, 1st; 93, 90. Cockerel, 90. Pullet, 93, 89. Breeding Pen, 93, 3d.

D. C. Plank, Logansport, Ind.—Cock, 92½, 3d. Cockerel, 94, 1st; 91½, 91, 90. Hen, 94, 2d; 93½, 4th; 92, 90½, 89½. Pullet, 95, 1st; 94, 3d; 94, 4th; 94, 94, 94, 94, 94, 93½, 93½, 93½, 93½, 93½, 93½, 93, 93, 93, 92½, 92½, 92, 91½, 91, 91, 90½, 88. Breeding Pen, 94.125, 1st; 93.25, 2d.

W. A. Scott, Whiteland, Ind.—Cock, 92½, 4th. Cockerel, 92½, 4th. Hen, 91½, 88, 87½. Pullet, 91½.

Burton & Shadrick, Peoria, Ill.—Cockerel, 93½, 2d; 90½. Hen, 93½, 3d; 90½. Pullet, 92, 92, 91. Breeding Pen, 92.86, 4th.

Major Griffin, Mauzy, Ind.—Cockerel, 92½, 3d.

W. S. Grimes, Manteno, Ill.—Pullet, 95½, 2d; 91, 90, 89½, 88½. Cockerel, 93, 91½, 91, 90.

M. G. Runser, Peoria, Ill.—Cockerel, 92½. Pullet, 91, 89½.

B. T. Pace, Salem, Ind.—Cock, 90. Hen, 92, 90. Pullet, 92, 91½, 91, 90½.

BLACK COCHINS.

Edward Woodard, Rushville, Ind.—Cock, 91, 2d; 88, 3d. Hen, 95½, 1st; 94, 3d; 92½, 4th; 90. Pullet, 95½, 2d; 94½, 91, 88½. Cockerel, 91½, 91, 90½, 90. Breeding Pen, 93.21, 3d; 90.75, 4th.

B. F. Hill, Indianapolis, Ind.—Cock, 93, 1st. Cockerel, 93, 3d; 93, 4th; 92½. Hen, 94½, 2d. Pullet, 95½, 1st; 95, 4th; 94½, 94. Breeding Pen, 93.93, 2d.

C. H. Rhodes, North Topeka, Kan.—Cockerel, 95, 1st; 93½, 2d. Pullet, 95, 3d; 94½, 93½, 93. Breeding Pen, 94.5, 1st.

Albert Lieber, Indianapolis, Ind.—Pullet, 93, 91½.

WHITE COCHINS.

W. A. Scott, Whiteland, Ind.—Cock, 90, 1st. Cockerel, 91½, 2d. Hen, 94, 1st. Pullet, 92½, 3d; 92½, 4th; 89. Breeding Pen, 91.75; 2d.

Geo. F. Bean, Cincinnati, Ohio.—Cockerel, 92, 1st. Pullet, 94½, 1st; 93, 2d; 92, 92, 91½. Breeding Pen, 92.43, 1st.

S. C. BROWN LEGHORNS.

E. A. Pierce, Indianapolis, Ind.—Cockerel, 95, 1st; 92½, 3d. Hen, 95, 1st; 93½, 2d; 93½, 3d; 93, 4th; 93. Pullet, 95, 94½, 94½, 93½, 93½, 93, 93, 93, 92½. Breeding Pen, 94.87, 1st; 93, 4th.

Chas. D. Pinkerton, Huntington, Ind.—Cockerel, 94½, 2d. Pullet, 95½, 1st; 95, 95, 94, 93½. Breeding Pen, 93.6, 2d.

W. L. Hagedorn, Indianapolis, Ind.—Cockerel, 92. Pullet, 95½, 2d; 95½, 3d; 94½. Hen, 93, 92½. Breeding Pen, 93.3, 3d.

Geo. O. Anderson, Homer, Ind.—Cockerel, 92, 4th. Pullet, 95, 94½, 94, 92.

H. E. Wells, Pleasant Grove, Ohio.—Pullet, 95, 4th; 94½, 94, 94, 94.

S. B. Lane, Spiceland, Ind.—Pullet, 94½, 93, 93, 92¾.

S. C. WHITE LEGHORNS.

William Tobin, Indianapolis, Ind.—Cock, 95½, 1st; 92, 3d. Cockerel, 96, 1st; 93½, 4th. Hen, 96, 1st; 95, 3d; 95, 4th; 94½, 94½. Pullet, 97, 1st; 96, 2d; 96, 3d; 95½, 95½, 93. Breeding Pen, 96½, 1st; 95¾, 2d.

Albert K. Warren, Lebanon, Ind.—Cock, 93½, 2d. Cockerel, 94½, 2d. Hen, 95½, 2d; 94. Pullet, 96, 4th; 95½, 95½, 95½. Breeding Pen, 95.3-40, 3d.

S. D. Hostetter, Mace, Ind.—Cockerel, 93½, 3d; 91½. Hen, 94, 93½.

E. G. Binford, Carmel, Ind.—Cockerel, 91. Pullet, 95½, 93½, 93.

BLACK LEGHORNS.

J. R. Craig, Indianapolis, Ind.—Cockerel, 93½, 1st; 90½, 2d. Pullet, 96, 1st; 95½, 2d; 95, 3d; 94½, 4th, 92. Breeding Pen, 94.3, 1st.

SILVER SPANGLED HAMBURGS.

A. E. Meredith, Indianapolis, Ind.—Cock, 93½, 1st. Hen, 92½, 3d; 92, 4th; 90½. Pullet, 92½, 2d. Breeding Pen, 93.18, 1st.

Frank Aldag, Indianapolis, Ind.—Cockerel, 88½, 2d. Hen, 94½, 1st; 94, 2d. Pullet, 94, 1st; 89, 3d.

W. F. B. SPANISH.

John Bennett, Sunman, Ind.—Cockerel, 96, 1st; 93½, 2d. Hen, 95½, 1st; 94½, 2d. Pullet, 96, 1st; 95½, 2d. Breeding Pen, 95.68, 1st.

BLACK MINORCAS.

Marmon & Pierce, Indianapolis, Ind.—Cock, 93½, 1st. Cockerel, 93½, 1st; 92, 2d. Hen, 93, 3d; 90½. Pullet, 97, 1st; 96½, 2d; 96, 3d; 95½, 95½, 95½, 95, 94, 91, 94. Breeding Pen, 94.87, 1st; 94.25, 2d; 92½, 3d.

J. T. Wright, Indianapolis, Ind.—Cock, 90½, 2d; 87½, 3d. Cockerel, 91, 3d; 90, 4th; 88. Hen, 94, 2d. Pullet, 95½, 4th; 93½, 92½, 92½, 92½, 92, 91, 91, 91, 90½, 90, 89½. Breeding Pen, 92.37, 4th.

F. C. Bandel, Crawfordsville, Ind.—Cock, 86½, 4th. Cockerel, 88. Hen, 91½, 91, 90½, 90. Pullet, 94½, 93½.

Ren W. Crockett, Delphi, Ind.—Hen, 92, 4th; 91½. Pullet, 95½.

B. T. Pace, Salem, Ind.—Hen, 94½, 1st; 91½, 91½. Pullet, 91½.

WHITE MINORCAS.

H. M. Galey, Crawfordsville, Ind.—Cockerel, 90, 1st. Pullet, 91, 1st; 90½, 2d; 90.

Ren W. Crockett, Delphi, Ind.—Hen, 90, 1st; 89, 2d.

WHITE CRESTED BLACK POLISH.

W. A. Scott, Whiteland, Ind.—Cock, 91, 1st. Cockerel, 92½, 2d; 92½, 3d; 92, 4th. Hen, 95, 1st; 93, 2d; 92½, 3d; 90½, 4th. Pullet, 94½, 1st. Breeding Pen, 93.37, 1st.

B. A. Richardson, Indianapolis, Ind.—Cockerel, 93, 1st. Pullet, 93½, 2d.

BROWN RED GAMES.

Twells & Scotten, Montmorenci, Ind.—Cockerel, 93. Hen, 95.

BLACK BREASTED RED GAMES.

Twells & Scotten, Montmorenci, Ind.—Cock, 96, 1st; 96, 2d; 94, 3d; 90½, 4th. Cockerel, 97½, 1st; 92, 2d. Hen, 97, 1st; 95½, 2d; 95½, 3d; 95½, 4th. Pullet, 97, 1st; 96½, 2d; 95½, 3d; 95½, 4th. Breeding Pen, 97, 1st; 95.75, 2d.

Ren W. Crockett, Delphi, Ind.—Cockerel, 90½, 3d. Hen, 92.

RED PILE GAMES.

F. R. Sheppard & Bro., Indianapolis, Ind.—Cock, 88, 2d. Cockerel, 91½, 1st. Hen, 94, 1st; 93½, 2d; 92½, 3d; 92, 4th. Breeding Pen, 92½.

PIT GAMES.

A. E. Dorsey, Indianapolis, Ind.—Cockerel, 1st. Pullet, 2d, 3d, 4th.

F. R. Sheppard & Bro., Indianapolis, Ind.—Cockerel, 2d, Pullet, 1st.

W. H. Fry, Indianapolis, Ind.—Cock, 1st.

HOUDANS.

W. A. Scott, Whiteland, Ind.—Cock, 90½, 2d. Cockerel, 93, 1st; 90½, 2d. Hen, 93½, 3d; 92½, 4th; 92½, 92. Pullet, 95½, 1st; 95, 2d; 95, 3d; 95, 4th; 95, 93½. Breeding Pen, 94.37, 1st; 93.31, 3d.

Andrew Cook, Waukegan, Ill.—Cock, 93½, 1st. Cockerel, 90, 3d. Hen, 94½, 1st; 93½, 2d; 91½. Pullet, 94½, 94, 93½, 93. Breeding Pen, 93.81, 2d.

BARRED PLYMOUTH ROCKS.

Daniel Christian, Roanoke, Ind.—Cock, 88½, 3d. Cockerel, 94, 1st; 93, 3d; 93, 4th; 92, 92, 91, 91. Hen, 92½, 1st; 90½, 2d; 90, 3d. Pullet, 95, 1st; 94½, 3d; 93½, 4th; 93, 93, 92, 92, 91½, 90½. Breeding pen, 94, 1st; 93.36, 2d.

Frank M. Baldwin, Marion, Ind.—Cockerel, 93, 3d; 91. Hen, 90, 4th; 88. Pullet, 95, 2d; 93, 92, 90, 89½. Breeding pen, 92.75, 3d.

W. S. Grimes, Manteno, Ill.—Cockerel, 91½, 88. Hen, 86. Pullet, 90½, 88, 85.

John Sellers, Mooresville, Ind.—Cock, 89½, 2d. Cockerel, 91, 89, 88. Hen, 89, 87½. Pullet, 92, 91½, 87½.

A. J. Forsyth, Nineveh, Ind.—Cockerel, 92, 88½, 87. Hen, 90, 85½, 84½. Pullet, 89½.

W. H. Kelso, Anderson, Ind.—Cockerel, 89. Hen, 87½, 87. Pullet, 90, 85½.

W. H. Flagg, Ben Davis, Ind.—Cockerel, 91, 89½, 88½. Hen, 90, 86½. Pullet, 91½, 91½, 91. Breeding pen, 91, 4th.

J. T. Wright, Indianapolis, Ind.—Cockerel, 90.

WHITE PLYMOUTH ROCKS.

A. J. Forsyth, Nineveh, Ind.—Cockerel, 91½, 1st; 89, 2d. Pullet, 94, 2d; 94, 3d; 93, 4th; 92. Breeding pen, 92½.

Anna Hinchman, Rushville, Ind.—Hen, 93, 1st; 92, 2d. Pullet, 96, 1st.

DOMINIQUE

Henry Sapper, Noblesville, Ind.—Cockerel, 86, 4th. Hen, 88, 2d. Pullet, 91, 1st.

BLACK JAVAS.

E. B. Murphy, Carmel, Ind.—Cockerel, 94½, 1st. Hen, 95½, 1st; 94½, 2d. Pullet, 94½, 1st; 93, 2d. Breeding pen, 94½.

SILVER LACED WYANDOTTES.

B. T. Pace, Salem, Ind.—Cock, 92, 1st. Pullet, 94½, 1st; 93½, 3d; 93½, 91. Breeding pen, 92.56, 2d.

A. Tyner, Greenfield, Ind.—Cockerel, 91, 3d; 90, 4th. Hen, 92½, 1st; 92, 2d; 90½. Pullet, 94, 2d; 93½, 4th; 93, 93, 92½, 90½. Breeding pen, 92.68, 1st; 90.93, 4th.

Ezra F. Shock, Huntington, Ind.—Cockerel, 91, 2d. Pullet, 93½, 93, 93, 92½, 92. Breeding pen, 92.5, 3d.

S. F. Gross, Atwood, Ill.—Cockerel, 89, 89, 87.

R. M. Foster, Tipton, Ind.—Hen, 92, 3d; 91½, 4th; 91, 88½.

Ben S. Myers, Crawfordsville, Ind.—Cockerel, 91, 1st. Pullet, 93, 92½, 91, 90½.

GOLDEN WYANDOTTES.

D. H. Jenkins, Indianapolis, Ind.—Cock, 90, 1st. Cockerel, 92, 1st; 91, 3d. Hen, 91, 1st. Pullet, 93½, 1st; 91½, 3d; 90½, 4th. Breeding pen, 91.87, 1st.

W. H. Schoonmaker, Joliet, Ill.—Cock, 89, 2d. Cockerel, 91, 2d. Pullet, 92½, 2d; 89½, 89½, 85. Breeding pen, 90.62, 2d.

WHITE WYANDOTTES.

Ben S. Myers, Crawfordsville, Ind.—Cock, 93, 1st. Cockerel, 92½, 1st. Pullet, 96, 1st; 95, 2d; 94½, 3d; 92½, 4th.

BLACK GAME BANTAMS.

F. R. Sheppard & Bro., Indianapolis, Ind.—Pullet, 91½, 1st.

YELLOW DUCKWING GAME BANTAMS.

Twells & Scotten, Montmorenci, Ind.—Cock, 92½, 1st. Cockerel, 93½, 1st; 93, 2d. Hen, 95, 1st; 94, 2d. Pullet, 94, 1st; 92, 2d. Breeding pen, 93½.

SILVER DUCKWING GAME BANTAMS.

F. R. Sheppard & Bro., Indianapolis, Ind.—Cock, 89½, 2d. Hen, 92, 2d.

Twells & Scotten, Montmorenci, Ind.—Cockerel, 95, 1st. Hen, 95½, 1st.

A. E. Dorsey, Indianapolis, Ind.—Cockerel, 89½, 2d; 89, 3d. Hen, 91, 3d. Pullet, 91½, 1st; 91½, 2d.

B. B. RED GAME BANTAMS.

Twells & Scotten, Montmorenci, Ind.—Cock, 96, 1st; 95½, 2d. Hen, 96½, 1st; 96, 2d; 94½, 3d; 94½, 4th. Pullet, 96, 1st; 94, 2d. Breeding pen, 95½.

A. E. Dorsey, Indianapolis, Ind.—Cock, 90, 4th. Cockerel, 92½, 1st. Pullet, 93, 4th; 92½, 92½.

R. W. Crockett, Delphi, Ind.—Cock, 92½, 3d. Hen, 90½. Pullet, 93, 3d.

RED PILE GAME BANTAMS.

Twells & Scotten, Montmorenci, Ind.—Cockerel, 93½, 1st. Pullet, 96, 1st; 95½, 2d.

F. R. Sheppard & Bro., Indianapolis, Ind.—Cockerel, 91½, 3d. Hen, 93½, 1st.

A. E. Dorsey, Indianapolis, Ind.—Cockerel, 92½, 2d. Pullet, 94, 3d; 93, 4th.

JAPANESE BANTAMS.

A. E. Dorsey, Indianapolis, Ind.—Cock, 93½, 1st. Hen, 94½, 1st.

ROSE COMB BLACK BANTAMS.

A. E. Dorsey, Indianapolis, Ind.—Pullet, 94½, 3d.

Charles A. Nelson, New Paris, Ohio.—Hen, 96, 1st. Pullet, 97, 1st; 96, 2d.

PEKIN BANTAMS.

A. E. Dorsey, Indianapolis, Ind.—Pullet, 93, 1st.

RED CAPS.

B. T. Pace, Salem, Ind.—Cock, 91, 1st.—Cockerel, 93, 1st; 90½, 2d. Hen, 91, 1st; 89, 2d; 87½, 3d; 87, 4th. Pullet, 92½, 1st; 91, 2d; 90, 3d; 90, 4th; 89½, 88. Breeding pen, 92.06, 1st; 90.06, 2d.

SILKIES.

Ren W. Crockett, Delphi, Ind.—Cock, 1st. Hen, 1st.

BRONZE TURKEYS.

Cyrus H. Mastin, Amo, Ind.—Cock, 96.

W. A. Scott, Whiteland, Ind.—Cock, 95. Cockerel, 95, 4th. Hen, 93, 1st. Pullet, 94, 3d.

P. S. Woods, Lebanon, Ind.—Cock, 97½, 3d. Hen, 91½, 2d.

B. F. Hill, Indianapolis, Ind.—Cockerel, 96, 2d; 95, 3d. Pullet, 97, 2d.

Mrs. W. P. Binford, Westland, Ind.—Cock, 98, 1st. Cockerel, 96½, 1st. Pullet, 97, 1st.

Robert Merrifield, Connersville, Ind.—Cock, 97½.

EMBDEN GEESE.

George Lawton, Yountsville, Ind.—Old pair, 1st. Young pair, 1st.

TOULOUSE.

A. E. Dorsey, Indianapolis, Ind.—Young pairs, 1st, 2d, 3d.

PIGEONS.

Judge—George Ewald.

R. Castenholz, Indianapolis, Ind.—Best collection high class pigeons.

A. E. Dorsey, Indianapolis, Ind.—Best collection toys.

PET STOCK.

A. E. Dorsey, Indianapolis, Ind.—1st on gray squirrel, 1st and 2d on Abyssinian guinea pigs, 1st and 2d on common guinea pigs, 1st on lop-eared rabbits, 1st on Belgian hares, 1st on Angola and Himalayan rabbits.

DOGS.

Judge—Royal Robinson.

MASTIFFS.

Dogs.

George Jackson, Beech Grove, Ind.—Ilford Caution, 1st.
G. E. Townley, Indianapolis, Ind.—Ashmont Victor, 2d.
W. E. Hagedorn, Indianapolis, Ind.—Don Gillivan, 3d.

Bitches.

G. E. Townley, Indianapolis, Ind.—Meg, 1st.
E. M. Bronson, Indianapolis, Ind.—Delph, 2d.

Puppies.

George Jackson, Beech Grove, Ind.—Morton, 1st.
Miss Singer, Indianapolis, Ind.—No. Name, 2d.

ROUGH-COATED ST. BERNARDS.

Dogs.

Miss Helen Taylor, Indianapolis, Ind.—No Name, 1st.

POINTERS.

Dogs.

J. E. Isgrigg, Indianapolis, Ind.—Graphic, 1st.
P. T. Madison, Indianapolis, Ind.—Ossian, 2d.

Bitches.

W. M. Kerr, ———.—Lizzie K., 1st.

Puppies.

E. N. Freeman, Brightwood, Ind.—Peoria, 1st; Bang, 2d.
J. E. Isgrigg, Indianapolis, Ind.—Queen Graphic, 3d.

CHAMPION ENGLISH SETTERS.

P. T. Madison, Indianapolis, Ind.—Rush Gladstone, 1st.

ENGLISH SETTERS.

Dogs.

F. W. Samuels, Indianapolis, Ind.—Trenton Rock, 1st.
E. G. Mathers, Indianapolis, Ind.—Rake, 2d.
L. Dewees, Landersdale, Ind.—Mac, 3d.

Bitches.

A. P. Craft, Indianapolis, Ind.—Nellie C., 1st.
S. Socwell, Indianapolis, Ind.—Gath's Spark, 2d.

BLACK AND TAN SETTERS.

Dogs.

P. T. Madison, Indianapolis, Ind.—Don's Boy, 1st.

IRISH SETTERS.

Dogs.

J. E. Bradshaw, Indianapolis, Ind.—One 1st, and one 2d.

George W. Spahr, Indianapolis, Ind.—Royal A, 3d.

Bitches.

E. Dorsey, Indianapolis, Ind.—Iual, 1st.

A. A. Anderson, Indianapolis, Ind.—Frankie, 2d.

Puppies.

Thomas E. Kearney, Indianapolis, Ind.—Boss, 1st; Grover, 2d.

FIELD SPANIEL.

Dogs.

H. S. Humphrey, Indianapolis, Ind.—Sussex Rex, 1st.

BLACK COCKER SPANIELS.

Dogs.

H. Hilderbrand, Indianapolis, Ind.—1st.

COCKER SPANIELS OTHER THAN BLACK.

Dogs.

M. & E. Burford, Indianapolis, Ind.—Victor, 1st.

COLLIES.

Dogs.

J. E. Dougherty, Lotus, Ind.—Dundee, 1st; Carlo, 2d.

Bitches.

H. G. Spellman, Indianapolis, Ind.—No Name, 1st.

I. R. Johnson, Indianapolis, Ind.—Queen, 2d.

Puppies.

W. B. Fletcher, Indianapolis, Ind.—1st.

E. E. Benedict, Orange, Ind.—2d.

S. R. Johnson, Indianapolis, Ind.—3d.

BULL TERRIERS.

Dogs.

J. Peterson, Indianapolis, Ind.—1st.

R. June, Indianapolis, Ind.—2d.

Bitches.

R. June, Indianapolis, Ind.—1st.

TERRIERS NOT OTHERWISE SPECIFIED.

Dogs.

Miss Wiles, Indianapolis, Ind.—1st.

Peter Morbach, Indianapolis, Ind.—2d.

PUGS.

Dogs.

W. P. Sockwell, Indianapolis, Ind.—Patsy, 1st.

Mrs. B. N. Pierce, Indianapolis, Ind.—Dandy, 2d.

Bitches.

G. S. Brecount, Indianapolis, Ind.—1st.

Mrs. B. N. Pierce, Indianapolis, Ind.—Trix, 2d.

TOY SPANIELS.

Bitches.

M. J. Ryan, Indianapolis, Ind.—One 1st and one 2d.

IRISH WATER SPANIELS.

Dogs.

P. T. Madison, Indianapolis, Ind.—Tipperary, 1st.

GREAT DANES.

A. E. Dorsey, Indianapolis, Ind.—Don, 1st; Vic, 2d.

MISCELLANEOUS.

A Lieber, Indianapolis, Ind.—1st.

John Cobb, Indianapolis, Ind.—2d.

LIST OF MEMBERS.

D. H. Jenkins, Indianapolis, Ind.
G. J. Bergenet, Indianapolis, Ind.
Walter Elliott, Shelbyville, Ind.
Chas. Styer, Kokomo, Ind.
John Emrich, Indianapolis, Ind.
B. T. Hill, Indianapolis, Ind.
C. H. Johnson, Rushville, Ind.
Daniel Christian, Roanoke, Ind.
Rev W. Crockett, Delphi, Ind.
W. H. Hubbard, Indianapolis, Ind.
William Tobin, Indianapolis, Ind.
I. N. Baker, Thorntown, Ind.
Ben. S. Myers, Crawfordsville, Ind.
H. C. G. Bals, Indianapolis, Ind.
W. F. Christian, Roanoke, Ind.
Dr. W. J. Elstun, Indianapolis, Ind.
Edward Woodard, Rushville, Ind.
B. T. Pace, Salem, Ind.
J. W. Foutz, New Castle, Ind.
Sid. Conger, Flat Rock, Ind.
W. P. White, Rushville, Ind.
W. H. Fry, Indianapolis, Ind.
B. N. Pierce, Indianapolis, Ind.
E. A. Pierce, Indianapolis, Ind.
R. Twells, Montmorenci, Ind.
W. W. Johnson, Indianapolis, Ind.
A. Tyner, Greenfield, Ind.
Cy. W. Neal, Marion, Ind.
Major Griffin, Mauzy, Ind.
J. H. Lee, Indianapolis, Ind.
Henry Allen, Bloomingdale, Ind.

BEE-KEEPERS.

The State Bee-keepers Association met in the lecture room of the State Board of Agriculture, State House, Wednesday, January 16, 1889, at 1:30 P. M., and was called to order by President Collins, of Mattsville.

Mr. G. M. Hicks occupied the chair, while President Collins delivered his annual address, as follows:

PRESIDENT'S ADDRESS.

While the off years in apiculture are hurrying along with their weary days of labor and disappointment, we have three measurable compensations for our time and effort. The honey market is being cleared and the number of producers lessened, while the bees remain healthy and the colonies strong. At the same time our individual and collective experience is broadening, as is also our knowledge of apiculture improving our methods of manipulation.

As we come from distant fields, bringing experiences as varied as the endless variety of conditions under which we labor, how inspiring it is to meet each other with a hearty shake and pleasant smile. Is not friendship the cream of life, and is not the union of mind and effort in a common interest the groundwork of friendship? Should not we apply this thought more widely than by meeting only once a year in this capacity? Why not prepare a good display at the State and county fairs and make it a nucleus about which congenial minds may gather? Why not meet oftener with our neighbors in their local societies, and even visit them in their homes? A child learns but little in one day at school. Allow me to suggest that all knowledge is obtained one item at a time. The mind can grasp it in no other way. Much more is usually taught at a convention of this character than we remember, but by repetition we gradually master it and make it our own. If any one will attend societies and read up on bee culture a few years while working with bees at home, he can then see the great advance he has made, but he can not say just where or when he made it. All labor is elevating or degrading in its effects in proportion as it requires thought and skill to guide it. You may force a horse to draw you, or you may drive a pig from place to place, but the insect world must be led and gently invited to do our bidding. A numb-skull may drive a trained horse; an ignoramus may scare a pig, but he can only lead a bee and compel it to build its marvelous combs according to man's convenience and fill them with the largest stores of the richest sweets, who has studied the law of its instinct and has mastered the mysteries of the hive.

One bee-keeper told me that the drones killed his queen. Another complains of the moth. One man told me that his neighbor's 100 colonies pounced down on his six colonies and ate them, honey and all. A friend has trouble to get bees into the sections, and another to get them to work at all.

Now, drones never kill queens, nor do moths destroy a normal colony of bees; while 100 colonies are more likely to rob one of their own number than those away from home. If the conditions are right all bees will work in sections, and not loaf about the hive. In bee-keeping as in everything, "ignorance is the great sin," and research and tact have a most happy reward, while there is no greater pleasure than the study of entomology and the peculiar and fascinating habits of bees.

I may name a few thoughts which have been claiming attention from bee-keepers recently. For instance, nature's hive is a very dense coat of passive bees inclosing the cluster, while within this shell the bees may move about, or even rear brood. In warm weather they abandon this shell and renew it only when needed for protection from cold or storm. An artificial hive is used partly for the protection of bees, but largely to direct their work to suit the convenience and wishes of man. There is a very active evolution taking place in selecting the most desirable hive and fixtures. Amidst the chaos of inversion, horizontal section, fixed and loose frames and sections, tin, wood and wire-cloth separators, the result so far points to the open sided, one piece, one pound section $4\frac{1}{2} \times 4\frac{1}{2} \times 1\frac{1}{2}$ inches. Also to wood for separators and some form of section case rather than wide frames. Amid the dust and smoke of hot discussion we still see the old Langstroth and hive, or a modification of them still holding sway.

Another thought on the collective individuality of a colony of bees is that of present condition. If a hive cover leak, or if a hive be often removed or opened to admit light, the bees smoked or the combs disarranged, the queen removed or introduced, or the purpose of the bees repeatedly thwarted, especially during a honey flow, they may become discouraged and neglect work, or even swarm out. Dr. Tinker, of Ohio, at the N. A. Bee Association, gave a method of preventing increase without crossing the purpose or will of the colony.

Some careful experiments are being conducted by Prof. Cook and others, on the practicability of planting for honey on cellar wintering, ventilation, winter stores, queen-mating, etc. Mr. Dameree, of Kentucky, has been experimenting on warming the cellar every few weeks to a temperature which permits the bees to break cluster for a few hours.

The Bee-keepers' Union has been doing efficient work in defending the interests of apiculture, and should receive the support of Bee-keepers.

At the N. A. Bee-keepers Society, last fall, new instruments of organization were adopted, making it a representative body. This society might consider the propriety of appointing delegates.

There is one more subject which should claim the attention of this Society, and that is the apiarian exhibit at the State Fair. On some years a few enterprising individuals have made creditable exhibits. In some States a committee has been appointed by State Societies to coöperate with the State Board of Agriculture, and the result has sometimes been that a commodious house was built for the

exhibit. We may expect but an inferior display unless some systematic effort is made to prepare for it.

Allow me, ladies and gentlemen of the Indiana State Bee-keepers' Society, to congratulate you on the favorable winter we are passing through, and the excellent promise of an abundant crop of honey the coming year.

George W. Hardwick, G. M. Hicks and S. P. Willson were appointed a committee on the President's address.

The following paper, prepared by Miss Scholl, of Lyon's Station, was then read, Miss Scholl having sent her regrets that she could not attend in person:

THE BEST METHODS OF OBTAINING STRAIGHT COMBS—THOSE IN THE BROOD CHAMBER CONTAINING NINETY PER CENT. WORKER CELLS.

One of the most interesting subjects connected with the keeping and managing of bees, is that of comb building. To some it is yet hidden in mystery, while to every lover of bees who is a close observer of their habits and instinct, it is a never failing source of admiration and wonder.

In speaking of this department of the work of bees, Quimby says: "In building comb, they have no square and compass as a guide; no master mechanic takes the lead, measuring and marking for the workmen; each individual bee is a finished mechanic. No time is lost in apprenticeship, no service given in return for instruction. Each is accomplished from birth. What one begins, a dozen may unite to finish. Each specimen of their work may be taken as a model. He who arranged the universe was their instructor. Yes, a profound geometrician planned the first cell, and knowing what would be their wants, implanted in the sensorium of the first bee an instinctive knowledge of all things necessary to its welfare, which remains unimpaired in its latest descendant."

The progressive bee-keeper of to-day finds it desirable and absolutely necessary that the brood-chamber of his hives be filled with perfect combs, of which at least 90 per cent. shall be worker comb. Leaving out the question of comb foundation and its use, we will consider some of the methods of having the brood chamber filled with natural comb that will be both straight and of the desired kind.

Can this be secured by any manipulations of the hive or the frames? The novice, perhaps, would at once say this can easily be done by placing an empty frame between two full ones, thus compelling the bee to build straight. Experience, however, teaches that while combs thus built may be straight they will usually have more drone than worker cells. All attempts at having comb built in alternate frames, whether one or more were placed in at the same time, have proved unsatisfactory, because it conflicts with the natural instincts of the bee; and this is an item of importance which we must bear in mind if we would secure the best results.

The queen always deposits her eggs in a cluster, beginning in the center, and gradually extending to the outer frames of the hive. Now, the natural instinct

of the bee is to construct comb to receive the eggs of the queen, and when we compel them to build comb outside this cluster of eggs and brood, or break the cluster with alternate empty frames, they will invariably build drone comb.

The method which conforms nearest to the instinct of the bees, and has proved by experience to give the best results, is to place natural swarms in empty hives. When this is done it is necessary to adjust the size of the brood chamber by means of division boards to suit the size of the swarm and the egg-laying capacity of the queen. The right spacing of frames is of importance; $1\frac{3}{8}$ inches from center to center is the proper distance. If the space be wider the combs are liable to be bulged or crooked. If starters are used they should run the entire length of the top bars of the frames, and should not be more than one inch in depth. There are a few other points which we might mention. Medium or small-sized colonies, with prolific queens, will construct a smaller per cent. of drone comb than very large colonies; while those having old queens that are beginning to fail should not be allowed to build their own combs.

To secure straight combs in the sections starters must be used, small strips of nice white comb being the most desirable. If strips of foundation be used the result will be comb honey containing "fish-bones." The best way to use foundation is to have it drawn out in large frames in the brood chamber, and then cut into strips for starters in the sections.

From experience we have deduced these methods as being conducive to the surest and most satisfactory results.

Mr. Kelly. I lift the back end of the hive the width of a brick, keeping it level from side to side. I then put frames in it having a one-half inch starter of comb foundation. The bees begin building comb at the upper back end of the frame, that being the warmest, and build downward and forward. It is well, if convenient, to change every other comb end for end, when built about half way along the top-bar. Some advised having combs built in fruit bloom, by full colonies with young queens. Other use full sheets of foundation to insure worker-comb, and thereby aid the bees.

Mr. J. M. Hicks. By experiments conducted I have ascertained that between twenty and twenty-six pounds of honey is consumed in building one pound of comb. That foundation is much cheaper than to allow building without it.

The Committee on President's Address reported tendering thanks to the chair for his able address, concurred in his suggestion that action be taken by the society looking toward a more systematic and representative exhibit of the products of the bee industry at the State Fair, and presented the following:

WHEREAS, The exhibition of the Apiarian Department at the Indiana State Fair has been a rather hap-hazard concern;

Resolved, That we ask that the State Board consider the propriety of creating a Department of Apiculture, with J. M. Hicks as Superintendent, and that the persons recommended by him as judges be appointed.

WHEREAS, The subject of honey production and the purity and adulteration of honey are subjects on which the public is both wonderfully ignorant and terribly misinformed;

Resolved, That the present premium of \$99 fails to bring out a creditable exhibit, and as the sister states of Ohio and Illinois are giving much larger premiums, we petition your honorable body to increase the premiums at our State Fair to \$300.

Resolutions adopted.

Mr. Hicks introduced the subject of queen rearing and fertilization of queens, stating that he bred from tested queens raised in strong colonies, not nuclei. He kept the drones out of his undesirable colonies by using foundation and the knife, thus breeding from choice stock.

Mr. Scott. I rear queens to be mated after most colonies have quit rearing drones. I stimulate the rearing of drones in choice colonies.

Mr. Hicks. I prefer stimulating the rearing of drones in the spring before woods bees and unstimulated colonies have begun breeding drones. The fall is too late for queen rearing.

President Collins. A good plan for obtaining strong, choice queens is to render a good, strong colony queenless and in five or six days cut out all queen cells. Now introduce an empty comb (a new comb is best) into the center of the brood nest of your choicest queen. In two days it will be filled with eggs. Cut it into strips an inch wide and stick it to the top bars of frames with the cells of one side pointing down, and introduce them into the queenless colony. This method is not original with me at all, but will give you many and fine queen cells.

J. M. Hicks. It has always been a great mystery to me how bees can make an egg a queen or a worker at will, and, if a queen, she will hatch several days sooner than the smaller worker.

President Collins. This is hardly so dark a mystery since it has been discovered that workers are simply dwarfed females and the queen a perfectly developed female. It is simply a matter of nursing and feeding a richer, more highly nitrogenized, more perfectly digested food.

Adjourned to 7 P. M.

EVENING SESSION.

The following paper was submitted by G. K. Hubbard, of Lagrange:

THEORETICAL APIARISTS.

The proper place for theory to end and practice to begin, before a person's knowledge shall be accepted by others without numerous reservations or exceptions, is a difficult matter to decide in the thousand and one questions that are constantly coming up in life; and, of course, in a pursuit like bee-keeping, where much thought and study are a necessary adjunct, the question comes with more than ordinary force.

As in every other controverted question, there is in this a "golden mean" to strike; and, in the judgment of the writer, that person who has reached the half way point between the two extremes is the successful apiarist.

We are inclined to the opinion that bee-keeping need not necessarily be carried on by specialists with their hundreds of colonies, but that every farmer or

tradesman who can take an interest in bees should keep a few to supply honey for home use. Among the great mass of bee-keepers, as we find them scattered over the country, there is far too little theoretical knowledge. This is shown by their ignorance of many of the facts concerning the habits and characteristics of bees, that the more intelligent apiarist is as familiar with as he is with the names of his near relatives. With such persons a thorough study of the theory of bee-keeping will give them more confidence in themselves whenever they wish to vary from some old plan, or when a new difficulty presents itself. In 1881, when I was quite young in the bee business, a gentleman asked me to unite two colonies of bees for him. I told him I never had done the like, but knew *how* it was done. (You see I had the theory.) And a little later, when I had the two colonies in one hive acting as much at home as though they had always been together, I had made a start in the *practical*; but the theory first learned from books was as valuable as though the same knowledge had been acquired from experiments.

Jas. Heddon has recently said: I know pretty well who the practical honey producers are in this country. One who has read and written for journals and produced honey on a large scale for twenty years knows the difference, immediately, between a theoretical and practical writer. Such a one, when reading an article, no matter how eloquently and skillfully written, will at once and correctly determine whether the writer has an apiary in his brain or in his back yard. I look with interest for articles from such men as R. L. Taylor and others I might mention, who ship their honey to market by the car loads.

Here is a good point. We accept information from people whom we know are well posted in apiculture theoretically with much more certainty, if it is backed by large practice, and especially so if abundant success has crowned their mode of procedure. Let us not forget, however, that it is rarely that a person will succeed in anything by being a mere imitator. You may read a plainly written article on some subject that takes in more than a brief operation, like the uniting illustration just used (say, for example, "The Production of Comb Honey," or "A Season's Procedure in Queen Raising"), and while we might all be pleased to get the writer's views, not one progressive, intelligent apiarist would do exactly as described. Your own ideas and methods will creep into all that you do, and thus unconsciously you adopt a plan of your own, and with reasons, too, for your method. You see, the theory of some one else and your practice will not always work; but the theory, varied to suit your own surroundings and thus applied to your practices, will be found to harmonize very well. This implies intelligence and a qualification we may call tact.

We mean by this, good judgment and adaptability, and we consider it perfectly fair to insert this qualification, because we believe that a person who has it not would be more than likely to fail in almost any business. And as bee-keeping is far from being an exception in this respect, it is only fair to assume that a reasonable degree of tact will be employed in reducing to practice the ideas suggested by others. Keeping in mind the idea which this construction of the word "theoretical" implies, it will be seen that we can very properly be theoretical apiarists to quite an extent. But if you should narrow down the meaning of theoretical so

that it applies only to that species of speculation which never will receive a decisive answer, and from the nature of the case can not be reduced to practical advantage in the apiary, then, of course, there can be but one answer to the question. The bee-keeping fraternity can not be benefited by people who "dream dreams and see visions." We wish to spend our time on that which will make us more successful from a dollar-and-cent standpoint; that which will enable us to more completely control our colonies as we wish; that which enables us to put a first-class article of honey on the market with the least expenditure of labor; that which will enable a beginner to expect a reasonable degree of success when he puts in practice the information that he has gained from others. Such theoretical bee-keeping is at once theoretical and practical, and practical theories are of great value, because they carry with them satisfactorily explained reasons, and give the possessor that intelligence and perception that is at the extreme opposite of "luck." In this busy, pushing world, it is the intelligent, active man who wins—the man who keeps posted, the man who is quick to perceive and apply valuable points in what he reads. A person who is well informed in current bee literature is said to have the theory of the pursuit well learned; and we maintain that, as the pendulum swings between such theory and that other method of procedure—which is nothing more or less than driving ahead in ceaseless, wearisome labor in the apiary, with no thought for new developments or the plans of others—that between these extremes the successful apiarist will be passed as the pendulum passes the golden mean between them.

The discussion of the subject of wintering bees was opened by Mr. Hicks, who did not consider bee houses or cellars necessary in this climate. But rather contracts the brood chamber and packs warmly with absorbents. He thought ventilation the basis of success, and bores a two-inch hole in the bottom board, covers with wire cloth, has roof constructed with a gable with a hole bored in it. There is a bottom board to the roof and it is also prepared as the rest. By packing the bees and covering with leaves, he has a constant but gentle ventilation and with it good success.

Mr. Scott. I think well of that way, but would advise to be sure and contract to the number of combs the bees will cover.

Mr. Stout. I had a neighbor (some years ago when so many bees died), who had fifteen or twenty stands, one of which had lost its bottom board entirely but stood on legs some two feet high. The bees all died in that apiary with plenty of stores except this one, and it was strong.

President Collins. Why not place a two-inch rim between the hive and bottom board. It will prevent dead bees from clogging and stopping ventilation. I believe it is considered that temperature is more important than any unusual amount of ventilation. My bees certainly consume much less honey in the cellar.

CAN ARTIFICIAL HEAT BE ADVANTAGEOUSLY USED IN WINTERING, AND IF SO, HOW?

W. Mason. I hardly think it needed in a bee house. If I used it I would favor running a stove-pipe through the house to putting a stove in it.

R. Russell. I don't think it hurts bees to warm them up carefully in winter. I took a hive into the kitchen in mid-winter, warmed and fed them well, and they did well. I also cut a bee-tree in bitter cold weather, and the bees and honey were knocked into a waxy muck. I picked out combs and bees not too badly mashed and put them all dripping and sticky into a hive and kept them warm a while and they wintered well.

Mr. Scott, Switzerland Co. It is well known that in very protracted and cold weather bees may become chilled on the borders of the clusters and even die while wedged in so tightly that the inclosed bees can't possibly break out. It also sometimes happens that bees, while rearing brood in late winter, are held so long by cold that they can't carry honey and pollen and keep a supply near the brood.

Now I have a tight, double-walled bee house and have been experimenting for ten or twelve years in the use of artificial heat. In protracted cold weather I warm the house to about 80° and hold it there till they break cluster and move freely about the combs. If the hives didn't open out of doors they would probably not bear that temperature; but they walk down to fresh air and light, and turn back again. They now cluster on a new place or carry food to the vicinity of the brood and cluster over it again. In my experience this practice has been very satisfactory, as my bees always winter quite well when I attend to them regularly in this way. I can warm so many at a time in this way and do not move the hives at all.

Peter Rabb. If a double-walled house gets cold it remains cold so long if no artificial heat is used. So with a cellar.

Mr. Scott. The house prevents too quick a change and keeps bees from trying to fly when cold enough to chill them.

Mr. W. Mason, Fillmore. My bees are kept in a house with ventilators, very dark. I think bees should be warmed up occasionally during protracted cold to prevent starving in the cluster.

Mr. Scott. If you warm them in confinement they will become excited and die or fill themselves and have dysentery. But when at home, everything natural, and on going down to the entrance they find they are not confined they remain quiet and do not roar.

Mr. Hicks, Tippecanoe County. Mr. Scott's ideas are correct, in cellar or confinement, anywhere the temperature in winter should be between 45° and 55°, if it rises to 60° you must cool off or carry out.

The President. I noticed in a bee paper the other day a suggestion on warming cellars or depositories where we wish to raise the temperature but little. Stand a joint of stove pipe over a lighted lamp, taking care to allow a little air to pass under at the bottom. Then place a tin over the top of the pipe with openings for air to pass. This will warm the room much faster than the unaided lamp. Thought there was no difference between cellar and out-door wintering except in the consumption of stores.

Mr. J. M. Hicks presented two samples of extracted honey. One white clover honey twenty-one years old, the other Alsike clover honey six years old.

Mr. W. Mason presented a sample of Chickasaw plumb honey of last year's gathering. The flavor to all was good and natural. That of the plumb was rather peculiar, being slightly acid-spreading, pungent and reminding in some points of white clover color amber shading to red.

Mr. Hornbuckle. Is stimulative feeding in the spring advantageous? I believe the good results of such feeding to consist in keeping bees at home more than in increasing the bees by breeding.

Mr. Dinsmore. I have fed early in the spring, and it always induces the bees to fly out and become chilled.

Mr. Scott. I believe we should feed in the fall and avoid bothering them in the early spring.

Mr. Willson. I advocate stimulative feeding in the spring, and that it be done late in the evening.

Mr. Stout. I postpone feeding till weather is warm enough so the bees can fly if they wish to.

The society adjourned to 9 o'clock A. M.

SECOND DAY.

The house was called to order by President Collins.

The subject assigned to Joshua Bull was next taken up. Mr. B. having sent his regrets that he could not be present.

How do you handle a swarming colony to get the best returns from the swarm and the parent colony?

This subject was discussed with great interest, being of great importance to the bee-keepers.

Mr. Baldwin, Marion. I hive a swarm on five or six combs if I have them, and when they are ready I put on sections.

Mr. Willson. I use foundation with sometimes one comb.

President Collins. But if you should have only 15 or 20 days honey flow, and it takes the bees 3 or 4 days to fill the brood chamber, will you not lose too much precious time, and have honey placed below, that should be in the sections?

Secretary Thompson. Gave Mr. Hutchinson's plan, as follows: If you place 4 or 5 frames in the new hive with a half inch starter, place above these frames a queen-excluding honey board, and put the sections from the old hive into the new hive *at once*. The swarm placed in the new hive will unload their honey sacks in the sections at once and the younger bees begin drawing out foundation in the brood chamber. This new hive and swarm should be placed on the old stand, where it will get the field workers and will have the full working strength of the parent hive before swarming, and as the combs are built in the brood chamber the queen fills them with eggs so that you force them to put nearly all the honey in the sections, while you get a brood chamber full of brood. While if combs are placed in the brood chamber first the bees will deposit honey in cells before cleaned

enough for the queen to lay in them. They will thus crowd the queen for room, making a weak colony in the near future, and having a start below they persist in bulging combs and are loth to go above.

This plan seemed new to many and was warmly discussed and studied.

The old colony may be removed to some distance and allowed to build up.

After a short recess the question of too much increase was discussed, opened by a paper by Mr. Mason, of Fillmore.

TO PREVENT TOO MUCH INCREASE—SECOND SWARMS.

This is a mooted question, and I believe that races of bees have a great deal to do with this subject of increase. In preparing for the spring work one of the main points is to get ready for the honey harvest. In our spring work increase is one of the essentialities with a successful apiarist as a honey producer, and to be that I do not favor a hive with too large a brood chamber, not larger than 2,000 or 2,400 cubic inches. In this I crowd my combs so as to take an extra comb over the usual number of spacing, and when I have the brood chamber full of bees and brood I at once proceed to put on my upper stories either for comb or extracted honey, as one of the methods to prevent too over-crowded increase; keeping the swarming fever down either by extracting or adding primed sections, by raising the case of sections directly over the brood chamber, putting on empty ones in place and under first case next to brood chamber. In case I have a prime swarm I hive them in another hive. As soon as the queen has her work started I remove the honey cases from the parent hive to this hive. After the parent hive have reared their queen cells I remove all but one to prevent after swarms, putting on section cases as soon as they show signs of being crowded in brood chamber. In this manner I am bothered with swarms but little, especially after swarms, thereby keeping down the swarming fever. As a rule I never prevent increase of bees, but try to avert the swarming impulse, for if we get a honey crop we must have our hives full of bees. And yet, with all our skill and management, they will swarm and swarm, until we become so out of patience that we forget ourselves and exclaim, "Confound the bees."

Mr. Scott. I give plenty of room; use side storage and sections above with ventilation. This, also prevents laying out.

President Collins. This is good, but not always effective. Dr. Tinker, of New Philadelphia, O., gave the following method at the North American Bee Society. The bottom boards to his hives are loose, and if No. 1 swarms, he sets the hive to one side, places a new one on the stand, and changes the section boxes from the mother colony to the new hive, using a queen, excluding honey-board. He now hives the swarm in the new hive, and if there are more bees left in the old hive than seem to be needed to care for brood, he shakes them off of the combs in front of the new hive. He now takes the brood-chamber of the old hive containing combs and brood, but having no bottom board, and after removing the lid of some weaker hive, places this upon it. The brood soon hatches and makes a strong colony. By repeating this process with every swarm, he finds at the end of the season that he has made no great sacrifice in the amount of honey gathered, and has no increase.

PLANTING FOR HONEY.

Mr. Hicks. I think on damp soil, Alsike pays, both the farmer and the bee-keeper.

President Collins. I think my bees were aided very much last year in securing winter stores by Alsike clover. I had twenty-three acres; it was interesting to see the bees work on it.

DOES IT PAY TO EXCHANGE BEES OF DIFFERENT APIARIES.

Dr. Abbott. I believe in the introduction of new blood by some means. Nature's methods brings this about in a measure. I often introduce a valuable queen from a distance into my yard.

Mr. Hicks. I think it as important with bees as with other stock. I do admire a beautiful, carefully bred bee, and think we should not forget docility, as well as beauty and activity.

The question was then asked :

Would you tolerate hybrid breeding?

Mr. Landers. I had in Texas sixty stands, and my best success in getting honey was from the black.

Mr. Russel. I believe they will store about the same amount of honey if on equally good pasture. But the Italians will reach deeper flowers than the blacks can work. The Italian bees are certainly much more docile than either black or hybrids.

Mr. Rabb. The hybrid bee will reach as deep flowers as the pure Italian.

Mr. Russel. The queen is said to go like lightning when on her mating tour, and if a drone start from the home apiary at the same time and follow her he becomes so weary after flying a distance that any drone she may meet will be more active and more likely to mate than the home drone.

Mr. George Cole. I breed many queens, and often take a number of nuclei away some miles to an apiary of good blood and leave them till the young queens are fertilized. I thus get "fresh blood" in my apiary.

Mr. Mason. I Italianize my neighbors' bees, and send to distant apiaries, the same as Dr. Abbott does, and get a new queen occasionally.

Mr. Scott. In speaking of hybrid bees I wish to say that they have been the best of honey producers. My extra good colonies, those that gather the greatest amount of honey, are hybrids, rather than pure Italians or blacks. I pay no attention to race, but breed from my most paying colonies. I want the honey. I admire a pretty bee, but for money I want it to get up and dust.

The following resolution was unanimously adopted :

WHEREAS, The extensive and gratuitous advertising of the various agricultural meetings by the State Board of Agriculture, and the rates given by the Central Traffic Association, brought large numbers to our meeting who would not otherwise have attended; and

WHEREAS, Secretary Heron, of said Board, has been very kind and attentive in everything necessary to make the meetings comfortable; therefore,

Resolved, That the cordial thanks of this Society be hereby extended to said Board of Agriculture, to the Central Traffic Association and to Secretary Heron for these favors.

The following officers were elected :

President—E. H. Collins, Mattsville, Hamilton County.

Vice Presidents—W. C. Hall, Joshua Bull, Valparaiso; G. B. Wilson, J. M. Hicks, Indianapolis; Mrs. T. M. Cooper, M. Mason, Fillmore; W. Jordan, L. Snyder, J. T. Coffman.

Secretary—G. C. Thompson, Southport, Marion County.

Treasurer—Mrs. C. Robbins, Indianapolis.

Adjourned *sine die*.

CANE GROWERS.

The Seventh Annual meeting of the Indiana Cane Growers' Association convened in the State Board of Agriculture rooms, State House, Indianapolis, January 15, 1889, at 1 P. M., President A. S. Chapman, of Madison, in the chair. A large number of members were present, and the Convention was favored with a number of lady visitors, and also a number of visiting gentlemen from other States, interested in the culture and management of sorghum. The State Board rooms were handsomely decorated for the occasion, and the sample room adjoining the lecture room was fitted up with tables, upon which was displayed a large number of samples of sorghum syrup, any one of which designated the State in which it was made, unsurpassed in the manufacture of sorghum syrup. So fine were the samples that a committee of wholesale grocers from the city of Indianapolis gave their unanimous opinion that in them the maximum of fine syrups had been reached. No one testing and tasting these samples could for a moment doubt the future of the sorghum industry in Indiana, or the benefits conferred on the industry by the Indiana Cane Growers' Association.

After roll call President Chapman addressed the Convention as follows:

PRESIDENT'S ANNUAL ADDRESS.

It gives me pleasure to again greet you all in annual session, come as you have to talk over the success and failure of the season that has intervened since last we met, and tell each other what experience has taught, that you may go back to your homes better prepared to make a success of the future.

Six years ago a number of enthusiastic and far-seeing farmers met in the old Board rooms across the street and organized what has grown to be one of the most important organizations in the country—the Indiana Cane Growers. Similar organizations were started in other states about the same time, or prior to, as also the National Association. All have ceased, or virtually ceased to exist, except that of the old Hoosier State, with the one exception I believe of Minnesota, which is merged in with the Horticultural Society. Thanks to the metal of which the Indiana Cane Growers is composed, it has grown to the dignity of the equal of any organization in the State, which means in the United States, for as a reliable

farm paper recently put it "Indiana has the best attended and best regulated farm associations in the Union." Dr. Furnas was, as you know, the President of the infant association, and his pluck and energy, guided by wise experience, had much to do with its successful growth, and I am glad he is with us to-day to assist us in our deliberations for the welfare of the organization. Since the organization of the association the industry it represents has passed through the most critical period of its history; prices of the products of the cane fell below cost of production, and enemies battled it from every side. The fittest survived, and to-day sorghum stands purged of its old ignominious name, for the man who boiled a pot of blackstrap has ceased to exist, or has become so small that he makes no impression, and to-day good sorghum syrup is esteemed by a majority the best table syrup we have. If these years of adversity have brought this about we are fortunate to have had them. We know at least that the entire industry stands high in the country to-day; and every farmer in the land is learning the value of sorghum as a farm product. One year ago when we met in this room we had passed through a season of disaster to the farmers; their crops had failed and the consequent stringency was felt all over the land; but to-day we meet again enabled to thank God for bountiful crops and barns well filled. Sorghum has thrived with the rest, not only in the field, but in the factory, for the experiments with sorghum sugar have proven a success the past season that insures its future. The Indiana Cane Growers' Association carries the honor of much of this. The deliberations of your conventions have been read, studied and acted upon, its demands for government assistance in experimenting has been granted. It has paved the way of success. Your early members are among the leaders in the industry. Among them we find Prof. Wiley, ex-Secretary Deming and others.

With such a record and with such success achieved, I congratulate you all, and I feel proud to stand before you and deliver my second annual address as your President.

Touching the government experiments on sorghum, after the appeal made by this association last meeting, Congress appropriated \$100,000 for that purpose. The appropriation being made late, but about \$35,000 was used the past season, viz., at Rio Grande, N. J.; Conway Springs, Sterling and Douglass, Kan., and Kenner, La. The experiments have developed the fact that sugar can be made from sorghum at a good profit by the diffusion process on a large scale, but it has also proven that making sugar by the diffusion process on a small scale, at the present prices, is impracticable. Some \$65,000 of the appropriation yet remains unused. Indiana should endeavor to obtain a portion of it, and I refer the matter to you for your deliberation. A year ago resolutions were adopted by this association praying the Legislature to offer a bounty for sugar grown in Indiana. The Legislature is now in session. I call your attention thereto. The time is most appropriate, as with a share of the congressional appropriation, which could readily be obtained if favorable action be taken by our State Legislature, and a bounty paid on home-produced sugar by that body, experiments could be made as to the practicability of Indiana as a sugar-growing State under the most favorable circumstances.

Touching the government assistance in perfecting the syrup industry, discovering and establishing the best machinery and methods applicable thereto, I think you should still make your voice heard, for to the mass of farmers the raising of the best varieties of cane, the knowledge of the best methods of making the syrup, and the most practical machinery, added to a general knowledge of the uses of sorghum as a general farm crop, is of far more importance than how to make sugar, though the latter is by no means to be ignored. The present Senate bill placing sugar on the free list should receive your attention, not as a political measure, but as one affecting the industry you represent; for as cane growers and sugar and syrup manufacturers our interests are one, not to be divided by political measures at variance with these interests. All these questions should be discussed brotherly and to the end that all may be benefited thereby.

In a multitude of counselors there is wisdom, therefore your aim should be to add to the general stock of knowledge. Have you learned the slightest thing of interest in your business, tell it, and when all is massed together you will find a fund of knowledge obtainable in no other way, well paying you for your attendance at this meeting, so that when you go home you will feel "I have both given and received, I have taught and been taught, and I feel gratified at having attended the seventh annual meeting of the Indiana Cane Growers' Association."

There is one question that is daily asked that in your deliberations this association could settle, for the farmers all over the land will read your published proceedings and follow your recommendations, and that is, the best general varieties of sorghum for farmers to plant. That and similar questions should be discussed at your leisure. Let each and every one add to the proceedings of this meeting the best he has. If you want to know something ask it. Your question will draw out an answer that all will be benefited by. By this means you will make this meeting the best in the history of our organization.

In conclusion, ladies and gentlemen, let me thank you for the courtesies shown me since I have had the honor to be your President, and I know you will extend the courtesies to my successor. Thanking you for your attention, I now wish you all wisdom in your deliberations, a successful meeting, future prosperity to our association, and a happy new year, showered throughout with the blessings of an ever bountiful and merciful God.

W. F. Leitzman's motion, that each sample be taxed ten cents as an entry fee and samples numbered instead of names being attached, so that the judges would not know whose sample they awarded the premium to, was carried.

The Chair appointed the following committees:

Committee on Resolutions—Messrs. Leitzman, McCorkle and Richmond.

Committee on Officers—Messrs. Berry, Cleland and Tomlinson.

Committee on Programme—Messrs. Nicholson, Tomlinson and Richmond.

Committee on Addresses—Messrs. Tilson, Engle, Neff and Furnas.

W. F. Leitzman. I do not believe the climate of Indiana will do for sugar making, but for syrup I will put it against the world.

Peter Raab. I think it is all in the making.

S. W. Tilson. I concur in the remarks of Mr. Leitzman. Cane making is treacherous; one year it is one thing, another it is something else.

W. F. Leitzman. Rain causes the sugar to revert.

Prof. R. T. Brown gave his experience, which went to substantiate Mr. Leitzman's explanation, that rainy weather and second growth destroy the granulating power of sorghum, termed reverting. He got seed from the patent office in 1854, and experimented with it each week after the first heads made their appearance, cutting a hill for trial each week. He got the sweet out by first cutting into shavings and then percolating, in fact, the diffusion process on a small scale. At first he found no sugar, but glucose, but as the cane grew on toward ripening the glucose became less apparent, and in its place sugar appeared, until frost destroyed the sugar again when it deteriorated and glucose again appeared. He also tried it for feed, cutting when ripe into pieces about four feet long, and piling like cord wood, on straw twenty-eight inches deep, then covering it with straw to about the same depth. It kept green all winter, or at least until March, when he fed out the last. To feed it he run it through a cutting-box. The stock ate it ravenously.

In his opinion chalk would be better than lime to neutralize the acid. The lime should be weak and used sparingly.

W. T. Leitzman moved to appoint a committee of two to secure grocerymen to act as judges on samples and award premiums on same.

Motion carried and the Chair appointed E. S. Pope and D. M. McCorkle.

Committee on Officers reported the following named gentlemen to be voted for as officers for the coming year:

President—A. S. Chapman, of Madison.

Vice President—D. H. Talbert, of Spiceland.

Secretary—A. B. Dewey, of Cicero.

Treasurer—W. F. Leitzman, of Clayton.

On motion of Peter Raab, the Secretary was instructed to cast the ballot of the association for A. S. Chapman for President.

By motion the society concurred in report of committee, and the Secretary was instructed to cast the vote of the association for the gentlemen named for the various offices.

Treasurer's report was read as follows: Expense, 85 cents paid to Secretary for postage; balance on hand, \$3.50.

The report was received and ordered made a matter of record.

The new officers taking their seats made short speeches, thanking the association for the honor conferred, and promised their hearty co-operation in the advancement of the cause.

Committee on Samples, selected to procure judges, reported the following named gentlemen: A. McCleary, F. Ostermeyer, W. D. Wiles and M. L. O'Connor.

The question of stripping cane was here discussed:

E. Berry. Think stripping very essential.

Mr. Hutchinson. Think stripping does no good.

S. W. Tilson. Have tried all ways of getting the blades off and find the wooden sword the best. My experience is, cane has lain two months on the yard and made very good molasses.

Mr. Leitzman. I undertook to make some cane immediately after being cut, this being the desire of the customer who brought it. The molasses was bad, and I found it was sticking to the bottom of the pan. Asked the owner to have it lay for a week or more on the yard, so it would work better. After two weeks it worked quite well. Think it is on account of the gums contained in the stalks, which adhered to the stalk and went out with the bagasse.

Peter Raab. Have no use for stripping cane.

Dr. Furnas. In Red Wing, Minn., they make good syrup, but to make sugar they must make it immediately from the patch. I am glad to see the sorghum men. I think cane is bound to win, and will soon come in to more general use.

Mr. Raab. Have a man only eight miles from me who makes 400 gallons per day. He gets all he wishes to make at twenty-five cents per gallon.

President. Think if proper steps be taken, and the matter properly laid before the department and our Legislature, a portion of the unused appropriation can be secured for the purpose of establishing an experimental sugar factory in Indiana, thus giving our State a trial.

Dr. Furnas. Think the bagasse is very valuable.

This discussion was followed by a paper from A. P. Cleland, Birmingham, Ind., on

TIME OF PLANTING CANE.

Early Tennessee planted May the 8th, first seed heads showing July 18th, seventeen days from the time of planting. Price's hybrid planted May 5th, seed heads showing August 1st, time eighty-seven days. Early Amber, May the 8th, seed heads showing July 27th, time 'eighty days. Siberian, May 15th, first seed heads showing August 14th, time ninety days. Orange, planted May 8th, seed heads showing August 1st, time eighty-four days. Whiting's new variety, planted May 22d, seed heads showing July 25th, time sixty-four days. Honey Dew, planted May 23d, first seed heads showing August 1st, time sixty-nine days from time of planting. Amber, planted June 21st, showed seed heads sixty days after planting.

Yield of Early Tennessee 77 gallons per acre; Amber, 185 gallons; Orange, 225 gallons; Honey Dew, 100 gallons of syrup, and 50 bushels seed per acre. Other varieties I did not make an estimate of the yield. If you wish to make sugar from cane here in Indiana you must plant a patch of cane each week throughout the season. Commencing May 1st, you can plant as late as June 20. Have worked cane planted June 21st, as full of sugar as cane planted May 1st.

EVENING SESSION.

At 7:30 P. M., the convention met pursuant to adjournment, President Chapman in the chair.

DISCUSSION.

Dr. Furnas. Think drilling is the best way to plant cane.

C. B. Nicholson. I drop my hand and cover with a drag.

The Secretary and several members explained their method of dropping by hand and covering with the foot.

S. W. Tilson. I drop and cover as stated by the Secretary, and have made 616 gallons from three acres and sixteen rods.

W. F. Leitzman. I plant cane with a corn planter; fill holes of plate with lead, reverting on the side of plate where hole is smallest.

My way of preparing the ground is to work it down very level and smooth. This is very essential, as then the seed will not be planted too deep in some places and out of the ground in others. I till it the two first times with a scraper made of wood and fastened to a common two-horse cultivator, the lower edge of scraper being faced with iron.

By this means I get the weeds scraped into the middle of the row where they are more easily killed.

A. P. Cleland. Fall plowing is a good thing to help in tending cane. With it I get from 150 to 180 gallons per acre.

Dr. Furnas. Think cross harrowing the best way to commence tilling cane.

He here explains how he made a machine to plant cane. He fastened it to a common drag about six feet long, he and the driver riding on it. It was arranged with a crank attached to two screws about the size of a three-quarter auger, and the distance apart he wishes the rows. This acted as a force feed, and in this way he gets a continual flow of seed which ran through holes in the drag, and was covered by the back part of the drag with a shallow depth of mellow soil.

W. F. Leitzman. I am much opposed to cross harrowing.

D. M. McCorkle. Cross harrowing is good for cane and corn.

E. Berry. I harrow with the row, with an A harrow run backward, and a handle fastened to the pointed end, it being very easy to guide.

I hitch the horses to the outer corner of harrow, not using the doubletree.

W. F. Leitzman. The best way to handle cane is to bundle and sit it on end, covering the tops with bagasse.

Mr. Ingle. Think I can bundle and haul it faster than any one can haul loose, and make a better job.

D. H. Talbert. Could not trucks on a track be put in a yard at a profit, the track leading to the mill?

A. P. Cleland. I use sleds to get the cane to mill, as well as to take away bagasse.

S. W. Tilson. I burn my bagasse.

Dr. Furnas. In Louisiana I saw a factory where they burned it; thereby saved 12 per cent.

Mr. D. H. Talbert, Spiceland, Ind., read the following paper:

NATURAL GAS AS APPLICABLE TO SORGHUM MAKING.

Being fortunately located in one of the best little towns within the great gas belt of Indiana, surrounded by a prosperous farming community and supplied with an unlimited amount of nature's ready fuel, we readily agreed to the suggestions of trying the same for evaporation in the manufacture of sorghum and maple syrup. The entire operation concerning the use of gas was experimental, and as there was no one available who had fitted a furnace, or even so much as seen one fitted for gas, we were obliged to proceed blindly and learn by an expensive experience. We simply inserted an open pipe burner a few inches inside the furnace door, applied the burning piece of paper and turned on the gas, thus entirely ignoring the first and most important principle necessary to the perfect combustion of natural gas, viz.: the mixing of atmosphere in the proportion of about nine parts of air to one of gas. The only loss, however, resulting from this ignorance was the great waste of fuel, since more than double the amount is required for a given amount of work in the absence of air properly mixed. Next was the loss to us in labor daily expended in cleaning flues and bottoms of pans, from an excessive accumulation of soot. This difficulty is entirely removed by properly mixing air, in which case the surface of all vessels exposed to the fire will remain as clean as when new. The result of burning air with gas reduces the flame to a minimum and gives a maximum of heat, intensely hot in the region of burner, while shutting off the air reverses this, giving a vast quantity of smoky, yellow blaze, with a minimum of heat. Thus it will be observed how easy it is to locate, distribute and perfectly control the application of this heat to any sized evaporator from ten to forty feet in length, the first requisite being the necessary experience in manipulating the gas. The evaporator used for this trial was of an inferior pattern and only put up for temporary use. Notwithstanding all the difficulties encountered, and despite the misuse of nature's greatest fuel, the results obtained were of a high order and entirely satisfactory to the public and all concerned. It did the most perfect work of any fuel ever used, other conditions being equal. Giving as it does a heat absolutely perpetual, without the slightest variation, its power in evaporation is simply wonderful, absorbing all moisture within its reach. This feature is demonstrated by the experience of those who have used it in cooking. The housewife unaccustomed to its use will experience much trouble in keeping stove vessels supplied with water. This, however, is largely due to the fact of its being a self-feeding fire, requiring no attention, thus lessening occasions for visiting the stove, as one is obliged to in burning wood. Inasmuch as the rapid reduction of juice to syrup is the most essential factor in producing a first-class article, you will at once recognize an advantage in this continuous, excessive heat impossible to otherwise obtain, viz.: the convenience of applying it to a very shallow, flowing body of juice. The average customer and producer of cane readily comprehends the necessity of quick evaporation, and, with the improved quality of the product at hand, gas at once is practically demonstrated as being a direct means, otherwise unattainable, of aiding the manufacturer in establishing a permanent business, fully justifying him in placing the very best and latest improved

machinery and operating upon the best known methods in all respects, thereby building up an industry that will enable farmers to diversify their crops, encouraging them in the cultivation of sorghum, which is destined to become one of the most staple farm products, provided we manufacture nothing but a superior article. We should bear in mind the fact of its being impossible to overdo this industry so long as the importation of syrups equals the home production, except by our producing inferior goods. Hence we should gladly hail this added means of perfecting our work and promptly avail ourselves of every opportunity for applying it to the best interests of our growing industry. Even steam heat is in all respects inferior to gas except where there is liability to burning or scorching. First, because of its supposed reduction in cost, and again because of the ready supply, which is always forthcoming without attention from man. As to stirring sorghum molasses, gas has only one advantage over wood, viz.: your ability to perfectly control it, the operator being able to increase the heat at will or to instantly abolish it. In finishing steam heat is vastly superior to all others, as it will not burn or scorch when properly applied. We made no attempt to use gas for finishing. We cannot here detail the various successful methods of applying gas to furnace or steam boiler, but will mention a few general suggestions. In the first place, no man should assume the responsibility of fitting a furnace for its use until he has, from experience or by personal observation and the most careful research, acquired a thorough knowledge of the principles involved essential to the best results.

Next, my furnace or arch properly constructed for wood or coal, will be suitable for gas, except the fire box should be shut as in the case of threshing engines, since many unsatisfactory trials, we have decided it is impossible to burn gas successfully in a box so cramped as this, as it must have ample space for combustion, and at same time have vent through flues larger than two inches. A stationary two-flued boiler with strong draught, is the proper thing for gas. Under ordinary conditions only a few minor changes are necessary, such as the removal of grates and placing burner in such a position as to perfectly control draught, and properly mix it with the gas. Heated air is best for mixing when possible to so arrange. Furthermore, the inexperienced operator in contemplating the use of this new fuel, should not fail to compute the cost, so far as possible, in advance of the investment. He should first ascertain the probable cost of gas itself, and next should attain a careful estimate of the amount necessary for complete piping and fittings. This work is expensive and the beginner will likely be deceived, especially should he proceed in ignorance and find it necessary to tear out his work a time or two and make changes.

Certainly all who are directly interested in this subject, should persist in investigation, as a greater blessing could scarcely befall you than of operating a first class evaporator, with a flow of natural gas for fuel. Should this ever become your lot you will be truly thankful for an existence in this wonderful age of natural gas.

Question from E. S. Pope: "Could not gas be manufactured cheap enough to be of use in making molasses, it being made at 40 cents per 1,000 cubic feet?"

The question was decided in the negative.

The following letter was then read from Prof. H. W. Wiley, Chief Chemist of the Department of Agriculture, on sorghum and its prospects in the United States.

WASHINGTON, D. C., January 12, 1889.

A. S. Chapman, President of the Indiana Cane Growers' Association:

DEAR SIR—I had hoped that I might be able to send you ere this the advance sheets of bulletin No. 20, but they have not yet appeared from the press. I had also expected to be able to attend the meeting of your Association on the 15th and 16th instants, but I fear now that the press of official duties will prevent me from doing so. I desire, however, to extend a word of encouragement and congratulation to my old friends and co-workers in the sorghum business, who, by their industry and enthusiasm have maintained in Indiana the Association whose annual meetings continue to be both entertaining and profitable. As you well know, my work for the last few years has been chiefly devoted to the production of sorghum sugar, but I have not forgotten in all this time that there is a place for pure sorghum sirups which could not be filled by any possible extension of the sorghum sugar industry. As you know, the molasses left after the extraction of sugar from sorghum is more impure, less rich in saccharine matter and more poorly suited for table consumption than that which is made directly from the juices according to the old process. I do not apprehend, therefore, that the extension of the sorghum sugar industry will in any way tend to prevent the expansion of the production of a first class article of table sirups. I was asked a day or two since, by a person fond of sorghum molasses, if that article could be had pure in the Washington markets? Application had been made to a large number of grocery stores, but in no case could sorghum molasses be found. It would, perhaps, be difficult to obtain a gallon of pure sorghum molasses or sirup in any of our large eastern cities; yet it must be admitted that there is no kind of sirup used for the table which can compare with a fine article made from sorghum for purity, flavor and wholesomeness and enduring table qualities.

The fact that sorghum sirups can be made in a small way by inexpensive apparatus and without special chemical or technical control insures for that industry an enduring place in agricultural pursuits. Another point must not be forgotten, viz: that the sorghum sugar industry, on account of limitation of season and soil, is not likely to spread over a large area of our country; for instance, in Indiana it is scarcely possible that sorghum sugar can be made profitable unless it be in the extreme southern portion of the State. The severe frosts which often fall in September in the central and northern portions of the State would prevent the working of sorghum for sugar on a large scale. These early frosts, however, do not interfere with the manufacture of sirup and molasses, since even frosted cane, unless it has fermented, can be successfully manufactured into the above articles. I see, therefore, a prosperous future for the manufacture of a standard article of sorghum sirup, not only in Indiana but over vast areas of our country where it would be hopeless to expect the successful introduction of the culture of sorghum for sugar making purposes.

I have a vivid recollection of the remarkably fine samples of sirups which I have seen on exhibition at your annual meetings and I doubt not that the collection which you have at the present time will be equal if not superior to those of former meetings; I therefore respectfully ask that you secure from the makers some of the finest samples of these products for exhibition at the forthcoming Paris Exposition. Each sample should be carefully labelled with the name of the manufacturer, the locality and the kind of cane from which made. Please have the samples carefully packed and send by express at our expense, marked Department of Agriculture, Division of Chemistry, Washington, D. C., for Paris Exposition.

Members of the Association will doubtless be gratified to know that there is a hopeful outlook for the success of sorghum as a sugar producing plant. The process of diffusion, without which successful sorghum sugar making is impossible, has been successfully established not only for the production of sugar from sorghum but also for sugar cane. There are many minor details of a technical character yet to be worked out, but enough has already been accomplished to indicate the possibility of success.

The mild autumns of Southern and Western Kansas seem to afford peculiarly favorable conditions for the manufacture of sorghum. During the past season at the government station at Conway Springs the sorghum was still in good condition for manufacture as late as the 4th of November. It is possible that the conditions of the past season were more favorable than usual, but at least the above shows the capabilities of that region for sorghum production. I have, this morning, received a letter from a resident of Dnblin, Indiana, in which he asks my opinion in regard to the possibility of establishing a sorghum factory in that region of the State. Such inquiries as the above are reaching me constantly from all parts of the country, showing the increasing interest of our people in this great problem.

The recent success of the culture of the sugar beet in California, together with what has been done in the production of sorghum in Kansas, and the successful introduction of the diffusion process in Louisiana and Texas have emphasized the possibility of our own sugar production in the near future; at least the prospects are bright enough to enable us to demand that the sugar industry of this country should at least have a chance. For a period of at least ten years it should be assured of non-interference in so far as the protection of the sugar interests is concerned. If our Congress would declare that no dangerous reductions should take place in sugar duties for at least ten years it would be an assurance to capital of a safe investment. If it should be wiser to reduce the duties a compensating bounty should be established.

W. F. Leitzman, Clayton, Ind., presented the following paper entitled:

SORGHUM AND ITS PRODUCTS.

Mr. President, ladies and gentlemen, I enter upon this subject reluctantly, knowing that many of you have had much larger experience than myself, and whose knowledge of the subject under consideration is much greater than my own. I hope you will therefore pardon me should I utterly fail to interest you, or say a single thing that you do not already know.

WHAT SORGHUM IS.

Sorghum is a genus of tall grasses or canes, indigenous in India and Arabia and perhaps Africa.

The genus, sorghum, embraces several species, and each of these are divided into varieties more or less numerous.

The name sorghum in its comprehensive meaning embraces all these species and varieties. But in this country the name is used in a restricted sense, including only the sugar and syrup producing species known as sorghum (or holcus) sacharatum and all their varieties.

Of these canes we have two species: The Chinese sugar cane which came from China, and the African sugar canes which came from Africa. When these canes were introduced the Chinese canes were called sorghum and the African varieties were called imphees, but more recently the name sorghum by common consent has been applied to both species and all their varieties and hybrids.

The early history of the sorghum plant is somewhat obscure, being enveloped in the mists of antiquity, but here and there through the clouds of mist a ray of light shines upon this obscure page of its history and reveals the fact that sorghum was one of the first plants ever cultivated by man.

The cultivation of sorghum antedates the building of Solomon's Temple, the hanging gardens of Babylon, or the Pyramids of Egypt, its cultivation seems to have begun in the early morning of time "when the morning stars sang together, and Sons of God shouted for joy."

We have incontrovertible evidence that sorghum was cultivated in China more than two thousand years before the Christian era, and also that it has been grown in India, Arabia and Africa from a very remote antiquity.

In searching for the native home of the sorghum plant it is natural for us to seek for information from the earliest writers who make mention, however remotely, of the subject in question.

We learn from the Bible by referring to Isaiah 43 and 24 that sweet canes were an article of commerce betwixt nations 712 years before Christ.

About 600 years before the Christian era Jeremiah says: "To what purpose cometh there to me from Sheba, and sweet canes from a far country."

We learn from the above quotations that the canes here spoken of were sweet, that they came from a far country to the land of Canan, and were an article of commerce, but for what purpose they were used we are left to conjecture.

About 400 years before Christ, Heradalus wrote of honey which was made from canes by men, and about the same time one of Alexander's admirals, who had been sent to India on a naval expedition, told wonderful stories about honey which was made from canes without bees.

Pliny, who wrote about 60 years B. C., tells of sugar being imported from India and Arabia. From the foregoing it appears that the art of sugar and syrup making was known and practiced by the Arabians and the natives of India long before it was known to the rest of the world.

Even in China, where sorghum has been cultivated for more than four thousand years, its value as a source of syrup and sugar was unknown, until they gained

that knowledge from us. These people had been growing sorghum for nearly an eternity, yet they had only learned to utilize what we call the by products. The attention of Europeans was called to sorghum in 1786, by Prof. Pietro Arduino, of Florence, who, while visiting Southeast Africa, became interested in the imphee canes which was grown by the natives. He procured seed and carried it to his home in the sunny land of Italy, where it was planted and is still cultivated.

The Chinese and the African canes were both introduced into France in 1851, the former from Shanghai, China, by the Count Mantigny, the French Consul, and the latter from Natal, Africa, by Leonard Wray, an Englishman. A quantity of seed was sent from each of these countries to the Geographical Society, of Paris, where it was planted and carefully cultivated, and in 1854 sorghum was introduced into the United States. During the thirty-five years that has passed since its introduction it has passed through several critical stages.

Its advent into this country was heralded with a great flourish of trumpets. The expectations of our people were excited to the highest degree by the false representations of its remarkable qualities.

Sugar of a superior quality was promised, and syrup, not molasses, but "nectar fit for the gods," could be made *ad arbitrum*. All the farmer had to do was to get a little mill and a little kettle and grow a little patch of sorghum, and then he was not only to boil his own supply of a superior quality of sugar and syrup, but supply his less fortunate village and city neighbors also.

A bonanza was seen in the sorghum plant, and thousands all over the country rushed into the new gold producing industry. Not only were private fortunes to be speedily realized, but we were to become the richest nation of modern times, by saving the vast sum of money which we were (and are yet) paying to other nations for sugar and molasses. This was all very nice in theory but failed in practice.

Those who engaged in the business had little or no knowledge of the plant, or of its proper culture, and totally without experience in manufacturing sugar or syrup and without any proper appliances or machinery. The result was a total failure to produce sugar, but millions of gallons of black, unpalatable molasses were made for which there was no market, because unfit for use. Thus failing to meet the extravagant expectations of the people, sorghum was soon declared a failure, and its culture so rapidly declined that in 1860 its cultivation had nearly ceased. This was the first crisis in sorghum history in the United States. In 1861 the war of the rebellion broke out, which gave the sorghum industry a new impetus. The scarcity of sugar and syrup caused the price of these commodities to rule high, which acted as a stimulus to the new industry. Sorghum molasses sold at the factory for \$1.50 per gallon, and 50 cents per gallon was paid for custom work. Thousands of farmers again rushed into sorghum culture. A new life was infused into sorghum, and its manufacture into syrup became a great industry. So rapidly did its cultivation increase during the war that when the white winged angel of peace once more hovered over our country the use of sorghum syrup had become as common as pork and beans.

Nearly every farmer in the Northern States planted his sorghum patch as surely as his potatoes, if not more so, and poor indeed was the neighborhood that could not boast of one or more sorghum mills. This phenomenal growth of the

sorghum industry is not attributable to the popularity of the syrup, but it was a legitimate outgrowth of necessity. With the return of peace came a deluge of tropical cane syrup upon our markets, and being more palatable than most of the unsightly sorghum syrup, soon drove the latter to the wall, and its cultivation as rapidly declined as taken up. Sorghum syrup became very unpopular, and "sorghum makers" became an appellation of reproach, sometimes preceded by epithets more forcible than eloquent, which would look horrid if written on paper. Sorghum had become so unpopular that its name was suggestive of the very embodiment of unpalatableness. The thoughts of sorghum was extremely nauseating to some very sensitive persons, and the mere mention of its name sometimes acted as an emetic. This great aversion for sorghum is attributed to the miserable quality of syrup. Most of it was so vile that had it been offered to a well-fed hog he would have scorned "the sweet morsel" and passed on with a grunt of disgust.

This is said to have been the darkest hour in the history of the sorghum industry in the United States. Right here, and during its ante-bellum probation, is where sorghum got a good share in its unpopularity, which has been perpetuated from that time until the present, by the same class of unprogressive manufacturers who first polluted the fair name of sorghum, and who are doing more to-day to perpetuate the prejudice against sorghum syrup and to hinder the progress of the sorghum industry than the combined influence of all the cane growers' associations in the universe is able to counteract.

The unpopularity of sorghum and the retrogression of the industry increased and continued during the next decade. But amid the darkness and gloom that enshrouds this period of sorghum history as beacon lights made more conspicuous by the surrounding darkness, we behold a few faithful, energetic men whose faith in the ultimate success of the industry had never failed. And when the history of the sorghum industry shall be properly written the names of these men will illuminate this, the darkest of its pages, as do the stars of heaven by their brilliancy dispel the gloom on night.

These men, who were scattered here and there all over the country, had so improved the primitive mode of manufacture that they produced a fair article of syrup, which they readily disposed of in the local markets at remunerative prices. By the persevering efforts of these men the industry was kept from dying out entirely. Had they failed in their efforts to keep alive this industry, in all probability the manufacture of sorghum syrup would have been long ago reckoned among the lost arts. They not only prevented the entire abandonment of sorghum culture but succeeded in reviving the industry. This revival began in 1877 with the introduction of the so-called Minnesota early Amber cane, which was soon followed by early Orange and other improved varieties. About this time the idea of making sugar was again revived, and again the sorghum enthusiast appeared and in his wake closely followed the crank. Their mission seems to have been to deceive the elect if possible.

Many wonderful stories were told which rivaled the fairy tales of fiction, in which the future of sorghum was portrayed as being of triumph and glory.

They said it would furnish through all the year around
Our bread and our meats,
Our drinks and our sweets,
In extra white sugar for three cents a pound
No more we should buy
We'd make our supply,
And a surplus to sell to other nations around.

Many fanatical cranks appeared, prominent among whom were some so-called men of science, who prostituted the science of chemistry so as to bear false testimony corroborative of the fictitious statements concerning the capability of the sorghum plant. About this time (1877) Doctor Peter Colier, then chief chemist of the Department of Agriculture, became an enthusiastic believer in the future greatness of sorghum as a sugar producing plant. And during the years 1878 to 1882 inclusive, he published quite an extensive series of reports concerning experiments with sorghum and analysis of its juices.

Many of his extravagant statements have not been confirmed, either by subsequent analyses or experiments, yet they greatly assisted interested and designing men in bringing about the late sorghum sugar boom which culminated in 1883, after many large and costly factories had been built and equipped with very costly appliances, all of which after a few unsuccessful efforts to make sugar at a profit, went down in financial ruin.

On May 19, 1888, there remained only one large sugar factory in running order in the country, and that was at Fort Scott, Kansas: Chemical bulletin No. 18, page 103. The reason this factory had not succumbed as did all the others, the government had carried it through as an experiment station. As the sailor abandons his sinking ship as it goes down beneath his feet, so these factories were abandoned one by one, as they went down in financial ruin. The glorious future as predicted by the prophets had not dawned; the promised bonanza had not been found, and the glorious triumph of the sorghum sugar industry had, like a phantom, vanished in air. The victims were many who were left to mourn their losses. They might have been heard lamenting thus:

"We cherished fond hopes and we plotted grand schemes.
We had lived 'til we found them delusive as dreams.
Wealth melted like snow that we grasp in the hand,
The castles we builded have sunk in the sand."

Many of these factories were closed and dismantled long before the public knew of their failure. The managers, most of whom depended on their salaries for their butter and bread, frequently reported success in the midst of disastrous failure, and when the truth could no longer be concealed and the Superintendent got the "bounce," he was generally soon heard from in another part of the country "successfully" running a large sugar factory (into bankruptcy) on a \$2,000 salary. Every effort to make sorghum sugar ended in disaster, notwithstanding all that the government had done to aid in its development. In 1878 the investigation of the sorghum cane as a sugar plant was undertaken by the Department of Agriculture,

and has been continued to the present time. Since 1880 Congress has made annual appropriations to aid in this undertaking; the aggregate of these appropriations perhaps will approximate \$400,000, most of which has been used in trying to develop the sorghum sugar industry. Nothing of great value to the industry has been developed by these costly investigations and experiments until within the last four years, during which time much of value has been learned. Through the assiduous labors of Dr. Wiley, Chief Chemist of the Department of Agriculture, the process of diffusion has been so modified as to remove all reasonable doubts of its adaptability to the Ribbon cane of the South. But there appears to be some difficulties yet to be overcome before the process can be economically applied to the sorghum cane.

One great difficulty which alone would prevent the adoption of diffusion in syrup making is the great cost of the necessary appliances, and, unless the process can be so simplified as to greatly reduce the cost, diffusion will be of but little value outside of the sugar belt. Here in Indiana sorghum is only cultivated as a syrup-producing plant, and perhaps never will be successfully grown here for sugar. But as a syrup plant its cultivation has become firmly established, and, whether diffusion is ever brought within our reach or not, the industry will "still live." Although sorghum sugar making is not yet a financial success even in the favorable climate of Kansas, I believe the industry will yet succeed.

Had we no examples in kindred industries of earnest persevering effort, successfully overcoming seemingly insurmountable difficulties, we might lose faith in the enterprise, but when we review the early history of the introduction and cultivation of the tropical sugar cane in our country, or of the beet sugar industry of Europe, we find in them a stimulus to American genius which will continue until the problem of sorghum sugar making is successfully solved.

In a paper read before this association December 30, 1885, in referring to this subject, I said: "We are looking to Dr. Wiley as the Moses who will sooner or later lead the host of sorghumites triumphantly out of the wilderness in which we have wandered more than a quarter of a century;" and now after three years more of wandering, we have not yet reached the goal, but our leader has been permitted to view the Promised Land.

Like Moses when on Pisgah's height
He viewed the land so fair,
His soul was filled with pure delight
Yet never entered there.

But as we said before, it will matter but little with us whether sorghum sugar making succeeds or not, as our climate is not suited to the proper maturation of a sugar juice in the sorghum plant. But for the production of a fine quality of syrup, Indiana is not excelled by any other State in the Union.

The amount and value of sorghum syrup has already assumed a respectable degree of magnitude. The syrup produced in a single year will greatly exceed in value the sum total of sorghum sugar ever made in the United States.

The sorghum syrup product for the year 1887 is estimated at 40,000,000 gallons, valued \$12,000,000.00. This is about two-thirds of the total amount of our domestic syrups, exclusive of glucose.

The highest annual estimate we are able to find of sorghum sugar, is for the year 1883, which is placed at 726,711 pounds, which, if equally divided among our 62,000,000 inhabitants, each would receive less than one-fifth of an ounce.

Most of the vast amount of sorghum syrup produced is manufactured by the medium and smaller factories, which are indeed the native power which is moving this enterprise forward, and as the industry increases, the struggle for supremacy will begin, and the "survival of the fittest," will surely follow. The dull, plodding dolt will have to submit to "the law of necessity," and yield to the "eternal fitness of things."

D. M. McCorkle, of Richland, Ind., read the following paper :

WHAT I HAVE LEARNED THE PAST SEASON IN SORGHUM MAKING.

A little less than a year since the fiat went forth from the powers that be that we were to prepare and read a paper at this meeting. When first apprised of the fact it came to our mind very forcibly that it would be presumption in me with but one year's experience to instruct you, who have added to theory the practical knowledge of years. I have not yet been able to wholly divest myself of that impression. However, it is the duty of a soldier to obey orders regardless of what may follow. Therefore, I will attempt to respond to the call, and contribute a few thoughts to the general fund, hoping to have your indulgence, and that you will remember that I come not here as a teacher, but to sit at your feet and learn, as sat Paul at the feet of Gamaliel.

With the command to write came one also saying "write of the things you have learned the past year in sorghum making." I might ask myself the question, "What have I learned?" In answer, I will say, much every way, but nothing, I suppose, that you have not known these many years.

I do not know that I can do better than to tell you what I did, how I did it, and what came of it; leaving you to draw your own lessons, if indeed there be any. I shall not confine myself to the subject as it reads, but will assume the making includes the growing as well.

While cogitating in my own mind on the subject of growing and making sorghum I devoured everything I could find on the subject. I found some things that are conflicting, but much that was instructive, and from which I adopted some methods that seemed best suited to my wants. Having determined to engage in the business, I began to look over the available part of the farm for a suitable place for the "sorghum patch."

All things considered, I concluded a piece of ground supposed to contain between four and five acres, and of clay soil, would be the best place; not, however, without some misgivings as to its fertility, as it was sixteen or eighteen years from the native forest, and in that time it had grown fourteen or sixteen grain crops. I want to say just here this is not my method of farming, but from some unknown cause clover repeatedly failed to catch on this particular piece of ground. The ground was well broken early in May, and thoroughly worked with harrow, drag and roller,

In the mean time I had concluded I could plant my seed with the check rower. Having no dropping plates especially adapted to that purpose, I acted on a suggestion I saw in the "Guide," which was to fill holes in plates with lead, leaving a hole in the center of proper dimension to drop the right amount of seed. I repaired to the smith shop with plates and lead and set the smith to work. We soon found it would not work, as the lead would not adhere to the plate, and the holes in the plates being larger in diameter on under side than on upper there was no way to prevent fillings from dropping out while passing over the discharge, so that one revolution of the plates would not only have dropped the seed but the fillings as well.

Remembering an incident that happened two years previous to this time while calling on a neighbor who owned an interest in the check rower, and was using same, I found that by some means the plates had been placed in a box in an inverted position, and was working so well they had not discovered the mistake. Thinking they had worked in that position once they would again, I proceeded to fill them, using a common iron punch to form holes in the center. Having completed the job, the work of planting was commenced, and the planter began to click, click, click in the old familiar way, dropping the seed just to a dot, eight to ten in a place. Back and forth across the field we went, and I was congratulating myself on the success of my plan, when, like the parson's one-horse chaise, all at once, and nothing first, the thing came to a dead lock. Well, after much peeping and prying, searching and scratching, the trouble was found, and contrary to the laws of gravity one of the fillings had raised and come in contact with the cut-off. The thing was soon righted and away we went again, and, with only one or two mishaps of the same nature, the seed was planted with the check rower.

Acting on an idea presented to this Association a year ago by a member, I planted the cane twenty-two and one-half inches apart in the row, while the rows were forty-five inches in width. My seed was good, which, of course, could not be otherwise, as I procured it from friend Talbert, and came to the hill. I cultivated it the same as corn with the addition of cleaning out with the hoe and drawing dirt to each hill, at the same time thinning down from four to six stalks, and with this we left nature to finish the work, which I thought it accomplished rather hastily, as the canes were small. Will plant thirty inches apart in the row next season. This brings me to the making part of my subject. But a word here about getting in the machinery. I delayed ordering my outfit, supposing I would see goods manufactured by a number of different firms, but in this I was disappointed. After searching in vain for some time an officer informed me there was no exhibit of that kind there. After returning home I sent in my order, and after some vexatious delays the goods came all right, and no time was lost in putting in place. But do the best we could, Saturday noon came and everything was not just to our liking yet. However, we must make a run to see how the thing would act, and to try our hand, you know. The word was given to go, the wheels began to move, the juice came pouring into the receiving tank, went trickling through the conveyor to the filter and from thence into the defecating tank. In the mean time the senior member of the firm, the junior being the better half, repaired to the defecating tank armed with saccharometer, milk of lime, prepared after the most reliable

receipt, and slip of litmus paper. The test was made and the saccharometer registered only five. The milk of lime was added very cautiously as enjoined by the receipt and with much stirring. After repeated trials the desired change in the color of the paper came.

"Make the connection and fill the pan!" rang out on the summer air in clear and distinct tones. "Start the fire!" followed soon after, and sorghum making had commenced. We were soon skimming up and watching the process with much interest wondering what the product would be. Work now commences in earnest, as the only one who has any knowledge of sorghum making informs us that we have molasses in all of our back pans, and that something must be done or it will be burned.

Oh, for a thousand pair of hand, or the knowledge to use the pair we have to the best advantage! The crisis is passed and we are saved the mortification of seeing it burned up. After dint of much work and worry the run is finished, and the product is set aside to cool and await inspection. On the morrow we went on a tour of investigation and found a syrup—to tempt the gods? well, not exactly, unless their taste be somewhat depraved. Too thick for syrup and yet not in condition to be called sugar. What is it? We will leave it nameless.

With more experience comes better success, and best of all with cane that had lain in the yard some two weeks, and we have a syrup that while it does not come up to that high standard which we have set for ourselves, yet we think it gives us good ground for encouragement.

C. A. Porter, Flatrock, read the following paper on

HARVESTING AND YARDING OF CANE:

Mr. President and Gentlemen of the Convention:

With your forbearance and sympathy for the poor way in which I shall treat the subject assigned me, notably, the "Harvesting and Yarding of Cane," I will give you a little of my experience as gained by observation and contact with the subject.

First the harvesting of cane as done by our people was this: When I first began the raising of cane the idea was promulgated by the papers, and also by the frauds of sorghum that the blades made excellent fodder for stock. Now, when my patch, about one-half acre, got ready I went into it with a will to save the fodder, and while I was getting I aimed to get a plenty, and I stripped that one-half acre of cane by hand, and when it was done what a job was done. I got the blades tied and in the shed in good shape, and I must say that was the poorest and dustiest lot of fodder I ever handled, or ever expect to handle.

The next season I was advised to try a 4-tined pitch fork, and to not try and save the fodder. I succeeded much better, found the work easier, and that sorghum was not such a bad thing as I had concluded it was. That enthused me, and I made the purchase of a mill and pan, and then became a full fledged sorghumite. Oh, how time flies! Then I was a young man, scarce in the thirties, and now am fast hastening on to the fiftieth mile-post; advisers then I had plenty, all were

my friends, and all knew more than I on "how to make sorghum," but advice like cross-roads leads to different points, and while some gave success others presented nothing but a dismal failure.

After using the pitchfork for a few years I was again advised to try an innovation on the pitchfork, which was nothing more than a wooden sword, or a long narrow piece of some tough timber, sharpened on one edge with a part as a handle. That is with us a success, and is the best and last addition that was made by me in the stripping of cane, and that is our mode now of getting rid of the blades off of our cane.

As to the cutting of the cane as is now done by me is with a corn knife, as follows: A hill of cane is gathered in the left hand, bent over so as to suit the height and convenience of the operator, and with the corn knife held in the right hand, a blow is made by which the seed and about 2 feet of the top of the stalk is severed from the body of the cane stock.

Now at the bottom of the hill the mode is quite different, the stock is cut quite low into the earth as is convenient to do. Ever remembering the old adage about the hay stack, which holds as good in cane as in hay: "An inch at the bottom is worth two at the top."

As to the hauling of cane, there is as many ways as there are men to do the hauling, but with us the most common and accepted mode is to first fill in the front end of the wagon bed—and there is no other mode or manner of moving cane in my section only by one and two-horse farm wagons—and then the rear end until the load is level or the wagon is full.

Now here is an innovation to the handing of untied cane which has arisen since the introduction of lawn binders, and that is to tie cane into small bundles, conveniently to handle, and then place the cane in the wagon aforesaid. The cane treated in this way can be more quickly unloaded, but I always had my doubts as to whether the cost did not over run the profits, and so I will leave that problem for wiser and abler heads than mine to decide.

As to cane racks or frames made for the purpose of hauling large quantities of cane to those great factories now springing up in the West I know nothing of, as our people raise only for home consumption.

Piling of cane after the cane has arrived at the mill. Two or three pieces of rails or pieces of plank are placed on the ground to keep the cane from drawing the ground taste, or smell, as the folks term it, and for convenience for the feeder or his assistant in getting supplies for the mill, and that they will not be delayed in getting the cane by its slipping and crossing with other stacks as it rolls from the top of the hill to the bottom as it will be sure to do.

After the pile is completed and before it can be worked, it is a good idea to have several inches of the crushed cane or bagasse thrown on and over the top of the pile, so as to protect the cane from the sun and wind. Cane so treated will keep several weeks perfectly sweet and safe.

And right here let me say that you will see that sentiment aptly illustrated that was said by him who confounded the wise men in the temple of Jerusalem: "As ye would that men would do unto you, do ye the same to them." Right in the yard, even in the piling of cane, the careful man who has a fellow feeling in

his breast for his fellow men and a kindly feeling for his beasts, will pile his cane so the feeder can easily handle the same, and the coming of such a man is always gladly welcomed; while others pile theirs with a I-don't-care-he-is-paid-to-work sort of style. Now which class do you welcome, and which class does your help welcome? Which class is the easiest satisfied? Which does the least grumbling?

Now, gentlemen, I am nearly done, and if I have made any mistakes please treat them kindly, and remember if you are as badly frightened listening to these hastily penned remarks, penned only at the last hour, and then more from fear of a vote of censure from you, and the President's reprimand for disobedience to the orders of the society, as I am in the reading of them, I ask that the mantle of charity may so hide this essay that the sun of day shall never see the same again.

A. P. Cleland spoke as follows on

SMOKE STACK FOR SORGHUM EVAPORATOR.

Now what we want is to know what height and size to make a smoke stack for an evaporator. I will give some of my experience, which is as follows: In the year 1871 I constructed a six-foot furnace with a smoke stack 10 feet high, 12 inches in diameter. I found it took a large amount of wood to keep it going. In 1873 I put on a smoke stack 10 feet high, 8 inches in diameter, and I soon found that it took less wood to produce the same evaporation. In 1876 I put on a six-inch pipe, 10 feet high, and it made quite a difference in the amount of fuel. As I did not measure the wood I can not give experiments complete. In the year 1880 I bought a 21-foot evaporator and built a furnace to suit, and I put on a smoke stack 18 feet high, 11 inches in diameter, and I could make 75 to 85 gallons of syrup per day. In 1881 I put 4 feet more pipe on, making the smoke stack 22 feet high, and I could make 100 gallons per day with one-half cord of wood.

In 1887 I sold my evaporator and got one 24 feet long, using same smoke stack, 22 feet high, 11 inches in diameter, and I could make 120 to 125 gallons per day. In 1888 I put on 4 feet more pipe and it increased the capacity from 150 to 160 gallons per day. The man I sold my old evaporator to complained that he could not make more than 85 gallons per day. I asked him "how high is your smoke stack?" "It is about 18 feet high and 11 inches in diameter." I told him to put on 4 feet more of pipe and he did so, and it increased his capacity to 100 gallons per day. You will find that by having furnace front made so that you can shut off the draft when necessary, it will be of good advantage to you. I measured 25 cords of wood and made 5,030 gallons of molasses with it this season. The limit of smoke stack is 32 feet high. I would like to hear the experience of others on this subject.

METHOD OF MAKING MOLASSES.

My method of making syrup is to put in the first tank while filling from the mill one-half pint of sulphurous acid, and as soon as full, add one pint of cream of lime. Then turn down the swing pipe and let it run into the supply tank, and let it run in a continual stream into the evaporator. The machine for preparing the sulphurous acid can be procured of Daniel Root, Hudson, Michigan.

I will guarantee this process to make a good quality of molasses from cane grown on all kinds of soil.

Adjourned sine die.

STATE FLORISTS.

The third annual meeting of the Society of Indiana Florists was held in the Lecture Room of the Board of Agriculture, State House, February 22 and 23, 1889, J. D. Carmody, Evansville, presiding.

The society took up the general order of business, and immediately after calling the roll, President Carmody read his annual address, as follows:

PRESIDENT'S ADDRESS.

Ladies and Gentlemen and Fellow Florists:

Again we have the pleasure of meeting in council with a view of devising means for advancing the interest of our profession, and, at the same time add to the pleasure of the civilized world.

The principal difference between the savage and the civilized races is the disposition to improve their condition. The savage is content to live as his father lived; the same plan of building their habitation is retained; the same custom is handed down from one generation to the next, and when left to themselves, manners and customs never change, but, with the civilized, change with a view to improvement is the watch word of the day. Give us something new; it may be better than the old; if not, we will at least have had the benefit of experience, and by that light try again.

In obedience to this demand, wonderful things have been accomplished; the course of mighty rivers have been so changed that, by its crystal waters, the desert has been made to bloom as the rose; seas have been drained, and verdant fields now wave their golden heads of grain where once the billows rolled. Mountains have been pierced to make highway of communication and channels of commerce. Hills are cut down to make fertile valleys, and grand architectural piles occupy the space, which but yesterday was the home of wild beasts and the savage. This all engrossing desire to better our condition is what has brought this world to its present state of advancement, which, by comparison, makes past ages appear to have been peopled with children and imbeciles. To be sure, some few works of art stand as living monuments to man's industry, skill and indomitable perseverance, but in all that tends to improve the condition of the masses more has been accomplished within the past century than during all the previous ages of the world's history.

We may ascribe this grand achievement to the fact that the work of universal improvement has been systematically carried on.

Society is divided into numerous branches of industry, as for example, the builders, the agriculturists, the merchants, the law makers, the carriers, etc., and individuals of each distinct branch unite in societies to learn of each other the best passable means to further the welfare of all engaged in their special line of industry.

The old saying of "Every man for himself and the 'd——l' catch the hindmost" has given place to the more humane, social and progressive motto, "In Union there is strength."

The floriculture industry is among the latest creations of the enlightened world, and a liberal patronage of the florist and the press is an unfailing evidence of a high state of cultivation in a community.

Florists, to you is given the honor of placing the crowning glory on civilization's highest summit. It becomes your pleasant duty to put the finishing touch to all great works of art, and the consummation of every important event calls for your handy work; your skill as decorators is recognized and is constantly taxed; and if you would maintain the position you have so fairly earned, strive to make each effort better than the previous one; make the presence of flowers a necessity to the more perfect enjoyment of society.

This condition can best be brought about by a united and systematic effort upon your part. Let the florists in each locality unite in the establishment of a horticultural society with monthly meeting; get your customers to join with you, and instruct the amateurs to a proper care of plants; institute frequent flower shows, with such premiums for amateurs as will incite them to laudable efforts, and thus cultivate a love of flowers by the masses.

One branch of floriculture is in most towns much neglected, which, if more generally introduced, would do much to ornament and make cheerful and otherwise unattractive residence. I refer to the practice of window gardening. In crowded cities, where people are deprived of the marginal door yard, this is the only chance for flowers, but when tastefully arranged and properly cared for, they will delight the cultivator and give evidence to the outer world that the occupants are people of taste and culture.

Window gardening is most successful when boxes, instead of pots, are used in which to grow the plants. This should be made to fit the window sill and are secured in place by strong wires fastened to the outer edge of the box, and the other end to the window casing above. Train vines up these wires, fill up the center with bloom in plant. These boxes, when cold weather commences, may be taken inside the same window, and for a long time, with proper care, remain very pretty.

The culture of house plants in my section is not as much practiced now as in former years. Why it is so, I can not say; but I have been, the past two or three years endeavoring to get these window boxes introduced, and with good success. When placed on windows in a block, in a short time orders come in from others in the same building. Professional men get them for their office windows, and the roofs

of piazzas and porticos, when flat and easy of access, I have edged with these narrow boxes, which, when filled with hang vines and bright-colored geraniums, ever-blooming pituneas, etc., make a pleasing effect.

I trust florists of this society will strive to encourage this system of plant culture, as it will not only increase the demand for plants, but educate people at large into a fondness for flower growing in every accessible place.

I am informed by travelers that in foreign countries this method of plant growing is practiced to a far greater extent than in this country by the masses, especially in China, where every convenient place is occupied with flowers.

Let us strive to make Indiana noted for her floriculture, and if we can not excel the heathen Chinese it should be the fault of the climate, and not from a lack of energy on the part of our florists.

In my last remarks before this society I recommended a vigorous attempt on the part of the florists to establish floral exhibitions by and for the children, and as this is exclusively a business session, I trust some action will be taken to devise the best plan for a united movement in this direction. Teach children the culture of plants, and as they grow up flowers will be a necessity to their more perfect enjoyment.

Before closing my remarks, I feel it my sad duty to pay a tribute of affection and respect to the memory of our sister florist and co-laborer who has left this trial garden of ours, called the world. I refer to Miss Christine Dorner, who, with willing hands, bright smiles and cheerful disposition was ever ready to assist this society and encourage all to best endeavors. To her energy and excellent taste we are largely indebted for the success of our floral exhibitions. She was a stately lily among flowers; none saw but admired her queenly bearing, and all who knew her loved her for her gentle virtues. She was a devoted daughter, a loving friend, and a noble woman. To lose such a one is sad indeed, and our sorrow would know no healing but for the firm belief that as a perfect flower she has been transplanted to that upper conservatory, where, divested of the mortal body, she will be better able to bear perfect fruit, to the glory of the Great Gardener, who doeth all things well.

DISCUSSION.

E. G. Hill, Richmond. He has suggested some things in his address that are of vast interest to the florists of our State. I think he is right in trying to educate and get hold of the children of our land, for we know if we can instill in the minds of the children of this country a love for flowers and things that are beautiful, in time we will profit by it. We should endeavor to educate the children by the establishment of these flower associations. I hope we may be able to get this matter before us in a proper shape and be able to make experiments in this line. I for one would be willing to try and see what results may be accomplished.

W. H. Lawrence, Brightwood. It is customary, I believe, for a body of this character to refer the President's address to a committee for consideration. I therefore move that the Vice President appoint a committee of three, to whom the address may be referred, and that they be directed to report to-morrow morning.

The motion carried.

Vice President Dorner appointed M. A. Hunt, W. H. Lawrence and D. W. Cox as a committee on President's address.

Secretary W. G. Berterman submitted his report as follows:

SECRETARY'S REPORT.

The books of the Society show three honorary members and fifty-one paid up members. The Society was started two years ago and began with thirty-four charter members.

The financial statement is as follows:

Balance on hand February 1, 1888	\$102 19
Surplus from exhibition, 1887	153 83
Dues, 1888.	114 00
Other receipts	4 00
	<hr/>
Total receipts	\$374 02
Running expenses	\$104 99
Drawn by exhibition committee	184 13
	<hr/>
Total	289 12
	<hr/>
Balance on hand February 1, 1889.	\$84 90

We mourn the loss of one charter member, Mr. Henry Hilker. He died May 14th of last year. Suitable notice was taken by the Society, and a good many members attended the funeral, and scattered flowers over the grave of the departed.

Another loss by death was the early departure to another world of Miss Christine Dorner. She passed away peacefully Jan. 29th, of last month. A committee, with a proper floral offering, attended the funeral. Miss Dorner will be remembered by all who attended the annual exhibitions as having charge of the flower booth.

The Annual Convention of American Florists was attended by a good many members from this State. Mr. Fred Dorner was elected Vice President from Indiana. The next Convention will be held in Buffalo, New York, August 20, 21 and 22, 1889. Proper arrangements will be made by this Society.

The Indianapolis Florist Club, through its Secretary, reports its work during last year as follows:

A spring price list of plants was prepared. A general tendency prevailed for more uniform prices in plants. This was partly accomplished. One park was planted with blooming plants, with the aid of citizens. It is only a start, but it will bring better results.

The State House grounds should in some way be made attractive.

Fifteen hundred yards of wreathing was made by members for the Exhibition, and valuable assistance rendered. A silver cup was given as a premium to the Exhibition Committee.

A much better display was made at the State Fair on account of advance and revision of premium list.

On motion Messrs. E. G. Hill, Fred Dorner and Charles Rieman were appointed a Committee on Resolutions.

Wm. G. Berterman submitted the following report of the floral exhibition last year:

REPORT OF EXHIBITION COMMITTEE, 1888.

Our second annual Chrysanthemum Show and Floral Exhibition was a decided success in every particular except from a financial stand-point, but taking the increase of premiums over 1887 into consideration, our receipts were considerably ahead of the first exhibition.

The quality of chrysanthemum plants and cut blooms showed a decided improvement; the designs for special premiums were good, in some instances excellent; other cut flowers and cut roses were poor; a good display of orchids was made. The one judge system on deciding premiums gave universal satisfaction.

The weather during exhibition week was very unfavorable again; the wretched condition of the streets, and in consequence of poor street railway service, the campaign excitement just closed, these things altogether had a depressing effect on the attendance to the exhibition, but in spite of these conditions we pulled through splendidly.

Following is the financial statement :

RECEIPTS.

Banquet	\$17 00
Special premiums	58 00
Turned over by exhibitors	50 50
Auction	198 25
Tickets sold	847 33
Cut-flower booth	130 41
Miscellaneous	36 75
Total	<u>\$1,338 24</u>

EXPENSES.

Decorations	\$172 12
Music	116 00
Hall	150 00
Premiums	548 58
Printing, ads., and mail	140 04
Freight and express	55 03
Banquet	92 00
Miscellaneous	154 75
Auction	93 85
Total	<u>\$1,522 37</u>

Total expenses	\$1,522 37	
Total receipts	1,338 24	
	<hr/>	
Deficit		\$184 13
Inventory—Booth	\$20 00	
Estimated—Decorations	5 00	
Value—Muslin	7 50	
	<hr/>	
Total		\$32 50

It may be of interest to note that we paid \$205 premiums at the first exhibition, while we paid for the second \$548.58, a difference of \$343.58 in favor of the last exhibition. City Hall cost us \$25 more the first time on account of a new committee having charge of it.

Following members on account of the deficit, and having taken considerable cash premiums, turned over about \$50 cash and gave cut flowers, and rendered other assistance: J. D. Carmody, Fred. Dorner, Hill & Co., Henry Rieman, Chas. Rieman, Jacob Schulz, Berterman Bros., Mrs. Henry Hilker, John Hartje, Anthony Wiegand, D. W. Cox, Geo. Doswell, M. A. Hunt, and others.

Special thanks are due Wm. Langstaff, John Baker, W. H. Lawrence, John Berterman and W. S. Gordon for superintending hall, watching doors and help at auction.

Cut flowers were sent by Peter Henderson, John Henderson, Simmons & Co., Pitcher & Wands, and others, free of charge.

Floral goods, seeds, etc., were exhibited by C. F. Huntington & Co., Berterman Bros., Kipp Bros., and Henry Michel, of St. Louis.

All special premiums are paid, and no complaints made excepting in one or two instances, and these were satisfactorily arranged.

The case of bulbs kindly given by the Michel Plant and Seed Co., of St. Louis, was won by J. L. Hunt, Indianapolis, guessing the nearest; his guess was 3,618 beans; jar contained 3,606 beans.

A great many visiting florists from other States were in attendance, and the banquet given in their honor was an enjoyable affair.

Before closing our report we thank all that have given us their valuable assistance during the second annual Chrysanthemum show.

E. G. HILL,
W. H. LAWRENCE,
M. A. HUNT,
WM. G. BERTERMAN,
D. W. COX,
FRED. DORNER.

President Carmody. The report is encouraging in every particular.

The Query Box was opened and found to contain the following questions:

First Question.—I am glad to note that there is a bill before the Legislature to make the outer surroundings of our beautiful Capitol more attractive. Can any of the members of our society state whether this is authentic?

Answer.—There is a bill before the Legislature for that purpose, but I do not know whether it has passed.

Second Question.—“Do the florists of Indiana pay taxes on their plants? Are they taxed as personal property? Are perishable goods of yours exempted?”

DISCUSSION.

Mr. Rieman. I pay taxes on plants.

D. W. Cox, Crawfordsville. The Assessor takes the valuation of plants the first of April. The different plants are at that time taxed as growing crop and personal property.

E. G. Hill, Richmond. This subject is agitating the minds of florists all over the country. They have had the subject under consideration at Milwaukee. They take the ground there that they should be exempt from taxation on account of their liability to destruction. Plants are liable sometimes to freeze and be destroyed before we can get them away; then again it is difficult to put a correct estimate of valuation on plants, because at the first of April, when the Assessor comes around, we have plants, and we anticipate their value, but do not certainly know. They are not like hardware or groceries, which have a fixed value. It is burdensome that we should be taxed on green-house plants. If we can inaugurate some movement by which we could be exempt, it would be satisfactory, I think.

J. D. Carmody, Evansville. There is one thing Mr. Hill left out in his remarks. A storm might sweep all plants out of existence. When the Assessor comes around I put my plants in as low as I dare to. They have raised it sometimes, when I would make objection, and finally reach a compromise between the two. Sometimes you get the value of the property and sometimes you don't. Many people have plants left on their hands unsold that are really of no value to them when this is the case.

Wm. G. Berterman. On the first of April we have most of our stock on hands. Shortly after that we are sold out, and sometimes have a large amount of plants left which are of no value.

W. H. Lawrence. I wish to revert back to the first question, that is, in regard to beautifying the grounds of our Capitol. I see Mr. Langstaff, a member of the Legislature, has just come in the room. I think he is the author of the bill. Doubtless he can give us some information on the subject.

Wm. Langstaff, Indianapolis. I will say I have also a plat with the bill explaining it. Walks should be made and a place for a fountain. Also a place for the location of a monument to the memory of Governor Hendricks, and another for Senator Morton, grade and gravel the ground and make it look as though an engineer had something to do with it. In other ways we have had the ground laid off by a landscape gardener so it would be as fine a ground as you will find anywhere, if the bill could be got through. There is some objection to the bill, and the work here most likely will have to be done over again. They don't want to

do that, though; it is too expensive. This is one fault. They want it done if some one would do it free; but all this we don't propose to do. The bill is a good one and should be passed, and it would be a credit to the State of Indiana. The State House looks now as though it were set down in the Kankakee prairie, and, as a man remarked, with its head below its shoulders. If you go to the south front, you will see that the water runs up hill towards the building, making a mud hole, and is in a deplorable condition at times. We have a valuable State House, which cost much money, and we should have the grounds surrounding it improved, and I do not think the people of the State would lose by improving it.

M. A. Hunt, Terre Haute. I wish to call up the previous question. I am somewhat surprised that the question was raised in the way it was. It seems to me in justice that such perishable plants as we handle should be assessed as personal property, for the reason our investments are perishable also. My experience has been that green house structures have been valued in the city of Indianapolis at about what they cost, which I think is excessive.

E. G. Hill, Richmond. I suppose we will have to try this before the courts in order to get at the bottom of it. Let it come up before our State court, which is the only way to get a final decision as to assessing plants. Different rules are in vogue in different places. If we can get a decision from the Supreme Court of the State it would establish this thing and we would have to stand and take our medicine in large doses.

Mr. Langstaff. The question is, Mr. Chairman, how much property have you got on the first day of April? It matters not what kind of stock you have, it is how much have you got at that time? There is not a court in the United States that will give you any relief; but you have to pay tax on property at that time. I would like to see this change, but do not see how it can be brought about. Every man in Indiana who has property has to pay tax on that property.

D. W. Cox, Crawfordsville. Suppose the Assessor comes around in May or June, several weeks after the first of April. The question is asked what his property was worth on the first day of April. For example I have a green house, so much money and a valuable stock of plants growing. I am asked on the first day of April what those plants are worth on that day. On the second day of April or any other day in April there comes a hail storm, which we are liable to have, and I am greatly damaged, yet I have these plants on the first of April and I am asked what they are worth on that day, and I pay on property that is not of the slightest advantage to me. I can not see that we can get relief through the courts, but our redress must come through the Legislature.

M. A. Hunt. I do not know as we can improve on the present system and perhaps the best way is to let it alone, for the present at least.

J. D. Carmody, Evansville. Would it not be best for this Association to prepare a resolution to present to the National Society on this subject?

E. G. Hill, Richmond. That would not help the matter, because it comes within the jurisdiction of several States. We should have some State regulation if it can be had.

Mr. Gordon. I think the best course would be through the Legislature, in fact I believe our only redress is through that body.

Mr. Albertson, Bridgport. The gentleman wishes me to say a word in regard to taxing nursery stock. I will say that I do not count nursery stock marketable until two or three years old. I do not give in one year stock at all.

Third Question.—Were the different illustrations of the *Alpheus Hardy Chrysanthemum* produced last season, and this by different periodicals interested in flowers, accurate and true to life?

DISCUSSION.

E. G. Hill, Richmond. I have seen two notices of *Alpheus Hardy* reproduced from photographs. The cuts don't do justice to this *Alpheus Hardy* flower I have seen. Mr. Plunkett has given us a very fine engraving, but possibly he drew on his imagination slightly when he made it. Still some of the best florists have not had an opportunity of seeing this *Alpheus Hardy*. It is not over estimated. It is a fine flower, and those who buy on the strength of this engraving will not be disappointed.

W. H. Lawrence. At the *Chrysanthemum* show last fall I stood behind the *Alpheus Hardy*. In my exchanges, as I remember the cuts, some did not look like the *Alpheus Hardy* at all.

E. G. Hill. The one made by Mr. Plunkett was eight inches in diameter, made at Buffalo. Peter Henderson thought it did not do justice to the flower.

Fourth Question.—There is a *Carnation* known as "*Hinze's White*." Is Peter Henderson right when he spells it "*Hinzey's*?" Is Brother Hill right when he spells it "*Hintze's*?" Or are they both wrong, and the first named way right?

DISCUSSION.

Fred. Dorner, Lafayette. In this *Hinze's* it may be the "y" is left out and take "z" with some people, but it is never spelled in any other way but "*Hintze's*" when spelled correctly.

Fifth Question.—Are the members of this society, as a whole, in favor of Mr. John Thorpe's idea, viz: a "*National Chrysanthemum Society*?"

A general discussion but nothing definite accomplished.

Sixth Question.—Easter Sunday this year comes on Sunday, the 21st day of April, 58 days off. Taking the warm winter into consideration, how are the members going to shape *Hyacinths*, *Tulip*, *Crocus* and other Easter flower trade to suit the emergency?

DISCUSSION.

J. D. Carmody. Are you going to hold your flowers?

W. G. Berterman. I think we will be able to save some for that occasion.

Fred. Dorner, Lafayette. If the weather keeps warm I can not hold them. I keep my bulbs in the cellar, and I see now they are far advanced. The cellar is cool, but on warm days they will spring forward.

W. H. Lawrence. Brother Stuart, of Anderson, has a warmer place than we have, owing to the use of gas. I would like to hear from him.

Mr. Stuart, Anderson. We have gas, but do not have everything hot. Bulbs can be kept if kept in a cool place. Mine are on the north of the house, and will keep well if the weather is warm. Those I have in the cellar will shoot up in spite of me.

Seventh Question.—A Cincinnati florist wants every huckster and peddler of plants hung upon a sycamore tree. Will this society endorse the suggestion of their "Buckeye" brother, and proceed to hang "Hoosier" peddlers of plants?

DISCUSSION.

Wm. Langstaff, Indianapolis. It is the duty of every florist of Indiana to encourage the growth and cultivation of plants in such a manner that we inculcate a taste and love for the beautiful in every part of the State. If we cultivate that taste we will have many plants to sell. I do not care how many plants they sell on the streets; it is a benefit to those who are raising the plants. It may seem to them at first that they sell cheaper than the florists can afford to raise them, but somebody is making a profit. In my opinion, if the professional florists can not compete with the amateur he had better quit the business. Those gentlemen have greenhouses and have every chance in the world to grow plants, and I think they should compete with the amateur florist, and we should not go back on the street peddlers for many of those flowers are brought from the greenhouses, and I will encourage the growth and selling of plants and flowers upon the streets.

W. H. Lawrence. We understand you are opposed to capital punishment.

Mr. Langstaff. I am according to the Cincinnati plan.

E. G. Hill, Richmond. If anybody comes to me, I sell plants to them, and they can peddle them on the streets if they want. We can't help that.

Ninth Question. What is the opinion of this society in reference to the Nomenclature Committee now attached to the S. A. F. If a dealer represents his plant as he has largely developed it, and over a name that he supposes to be correct, what can the committee do with him?

Wm. Langstaff. I wish to say a few words in regard to the obligations of the association. Suppose something should happen to a green-house and all the plants be destroyed, we would then obligate ourselves to go and reimburse him in plants and give him a start again. I want you to talk this matter up and see if we can not get up something of this kind.

J. D. Carmody. I have no doubt that if any one were to lose plants in this way, others would contribute. The only thing necessary would be to have some systematic effort to bring the matter before the florists, and it no doubt would meet with response.

M. A. Hunt, Terre Haute. I understand this subject was discussed by the Executive Committee at the last meeting. Many of us have plants, the same thing under different name; we describe them, and it is a serious question what is to be done in the matter. It is for this Committee on Nomenclature to solve this question.

W. H. Lawrence. We have Prof. Pierre Valandigham from Purdue University with us, perhaps he would say a word for us on this subject.

Pierre Valandigham, Purdue University. I do not know as I could say anything that would tend to solve this problem. While there are some plants that are not true to name, there should be some means by which they could be properly classified. If anything could be done for good it should be published in the *American Florist*.

E. G. Hill, Richmond. The work of that committee is a large one, and it is going to have a very important bearing on the florists of this country. In the first place, it is intended by that committee to determine what is the prior variety. For instance, take *Fuchsia Frau Emma Tôyfer*, which is called by some the "Storm King." It is intended to settle the prior right of plants going over the country under different names. As to roses: it is the purpose of this committee to settle by which name these roses shall be known. It is further intended that people who get out catalogues should submit their cuts to it for inspection. These cuts, when properly gotten up, will give purchasers of plants over the country a good idea of what they might expect. Mr. Henderson stated to the committee last month that he would be willing to submit his cuts, and all that were overdrawn would be excluded. I think much good might come out of this committee. This Association should uphold the members of that committee in their work.

M. A. Hunt. Mr. Hill has opened up another phase of this question. I wish to say whatever action that committee may take, no doubt, will be to our best interest, as it has been committed to persons all interested, so far as being catalogue men. And whatever action they may take looking to a union of names of which these plants are held, and a reduction of spurious names which have been put on them in a catch-penny way. That puts us on the true line, and we should look with favor to this council.

E. G. Hill, of Richmond, read the following paper on

"ESSENTIAL THINGS IN CHRYSANTHEMUM CULTURE:"

Pot Culture—How to produce finely formed chrysanthemum bushes and splendid flowers upon the same (?) is the question uppermost in the minds of many in the profession; and it is hoped that this paper may bring to mind a few things essential to the production of fine plants.

The ideal plant in this country, and the standard at our exhibitions, is what is popularly known as the bush plant. This is supposed to be anywhere from two and one-half to four feet in diameter, of nice contour, and each branch terminated with a good sized, finely formed flower. Your essayist will treat of pot culture, believing by this method that finer flowers and better results can be obtained than by growing in the open ground and lifting as the season of flowering approaches.

Cuttings should be selected from strong healthy plants that have enjoyed a season of rest, immediately following their flowering. Plants propagated from plants thus treated assure us a more vigorous and healthy growth. Root the cuttings in a moderately cool house, and place in 2½-inch pots as soon as sufficient roots are formed. Place the newly potted plants in a nice sunny position, and as close to the glass as possible; the temperature of the house should be kept at 48°

Fahrenheit at night; if kept too cool growth is arrested and a check to the plant ensues. Plants where insufficient air is denied them, and when placed too far from the glass are apt to become weakened in growth.

An important question frequently asked is, when to repot? The answer is: whenever the ball or pot becomes well filled with nice working roots; do not allow the plants to become pot bound. Supposing the cuttings to have been potted off in February the next shift will be from the 2½-inch pots to 4-inch; this will probably require to be done the end of March. If the plants have progressed nicely the next shift will be into 6-inch pots, and this will need attending to early in May. It is advisable to replace again in the house for a few days, at least until root action commences, when, if danger of frost is past, they may be placed in the open air in a place suitably provided for them.

The summer quarters should be a nice level piece of ground arranged so that surface water from summer showers will readily pass away. Care should be taken not to set the pots in immediate contact with the earth else earth worms will find their way into the pots to the detriment of the plants. Some use boards for placing the pots on, others set upon pieces of slate, but perhaps the better method is to set the pots upon a bed of coal ashes; these prevent the ingress of worms and also allow the water to pass away freely. Set the plants in rows with aisles between each third row, making it wide enough to allow a man space to work in and to water. In no case crowd the plants, but set them far enough apart so that air and sunlight may have free circulation around each plant. When plants are thus set, exposure to the sun's rays and drying winds necessitates frequent waterings on hot days or windy weather; to prevent trouble from excessive evaporation it is advisable to surround the pots with refuse hops or leaves.

Gause or other shading used judiciously is certainly beneficial in mid-summer, but care must be taken to remove the same on the occurrence of wet and cloudy days, else black mildew and rust are sure to make their appearance when thus neglected. To return to the matter of potting. Shift from 6-inch to 8-inch pots whenever the soil is filled up with nice working roots, and give the final shift into the pots it is intended to exhibit in not later than August 1. Size and other considerations will determine the size suitable for the last shift.

Soil—One-half nice fibrous loam (rotted sod), one-fourth leaf mould, one-fourth old, thoroughly rotted manure constitute an excellent compost for the growth of chrysanthemums. The above would be still better by having four quarts of pure bone flour to every six bushels of compost.

Pinching out the points of growth and tying the young shoots are co-related, and must be conducted systematically and in unison. The grower must first fix in his mind the kind of plants he desires to grow, and then it is a simple matter to form and construct the plant as it develops and grows. If bushy plants are desired, the tender shoots must be carefully tied down before the growth matures sufficiently to become brittle, when it breaks easily. In tying, care should be used so that the loop that holds the branch in position be not so tight that it can not move with the rapid growth as it progresses. Simple wire hoops fastened to sticks serves admirably for tying the shoots to where a spreading bushy plant is desired; there may be three or more of these to each plant, thus giving a nice contour to

the bush. They may be removed when staged for exhibition. The last pinch should not occur later than the first of August if the plants are desired for exhibiting by November 10, or thereabouts.

Disbudding—Where finely formed flowers of good size are desired, all but the terminal or crown bud should be removed. This is best performed by using a pointed stick or pen knife. Care must be taken, however, else rough handling will destroy the work of months.

Feeding—Chrysanthemums and plants in general are like human beings; they can exist and flourish on some one or other staple food, but a change of food is best, and will bring with it surprising results. Use one week a very light dressing of fine old cow manure well pulverized, the next week use liquid manure, and so on. Feed commences after the buds are set, and the interested and observant grower can readily judge the quantity and time to apply the stimulant. Soot water may be used with advantage throughout the whole season, at intervals, and with beneficial results. Removing suckers from the plants should be performed carefully, so that the surface roots may not be injured or torn.

Watering—This is perhaps the most important matter incident to success in chrysanthemum growing. It is best that one man be intrusted this task, as he, if a little observant, will soon find out the nature and requirements of the different varieties. Some varieties require much more water than others, and this fact soon becomes apparent to one who is entrusted with the keeping. An interest in the final outcome—say one-fourth the prize money—will wonderfully quicken and energize the man in charge, and many of the successful ones attribute not a little of their success to this feature. If the plants suffer for water, and the foliage wilts from inattention, every occurrence of the kind militates against your success—hence the importance of careful, judicious watering.

For the black aphid, use either tobacco water or tobacco powder; moderate applications systematically used will rid the plants of this pest. Sulphur dusted on foliage will check and eradicate mildew.

Remove the plants from the open air as soon as danger from frost occurs, but do use only sufficient heat to keep the frost out of the house in which they are placed, taking the precaution to give plenty of air even on cloudy and wet days. Improvised structures, covered with cheap or oiled muslin, with a temporary steam or hot water pipe running through the structure—in case of necessity—will answer every purpose, and is often preferable to placing the plants under glass. Getting the plants to the show in good condition and getting the premium, are the two very interesting items in the history of him who grows Chrysanthemums for exhibition.

DISCUSSION.

M. A. Hunt. Most of us present saw the plants exhibited last fall. I would ask Mr. Hill what time in the month these plants were selected and propagated which he has just described?

E. G. Hill. Most of them were propagated in the latter part of February, and were placed in pots in the last week in March. They were not specially select cuttings, but picked up plants such as we grew in general stock. In growing standards I would advise to be particular to pick out young plants that grow up with most vigor, and it is important that you get a three foot stem on the plant not later than the middle of April, which I think can be done if pushed rapidly along.

Mr. Hunt. In growing chrysanthemums for cutting purposes which way would you deem advisable and bring the best results, to grow in pots or on benches?

Chas. Riemen, Indianapolis. I plant on benches. It is better than in pots, and make my cuttings the latter part of July.

Mr. Berterman. How late could you propagate?

Mr. Riemen. We can by a little effort have them pretty late.

Mr. Dorner. I have had them grow in open air, and as cold weather came on put glass over them, and they will keep there until the middle of December, nice, perfect flowers.

Henry Michel, St. Louis. We plant in June and keep until Christmas.

E. G. Hill, Richmond. Those fine flowers exhibited at the New York show all grew on Long Island in the open air. On the advance of cold weather they put muslin screens over them that could be rolled up and down to keep the frost off. Finer bloom can be obtained by the open air method, and a better color can be obtained, but it is necessary to ward off or make some protection against severe freeze or early frost. We sometimes have frost in September or October, which would ruin our chrysanthemums. I have seen them killed in September. In regard to chrysanthemum culture I have been studying up the English method, and perhaps some of you would be interested in what is called in England raising of plants. The Great Britain plant, as described in the paper, instead of growing quite a number, they aim to produce not more than five or six blooms to the plant. They grow the chrysanthemum flower in that style. I question in my mind whether there is any advantage in growing so many as is practiced here. I wish that, as a society interested in chrysanthemum culture, we would select a few specimens, and grow until the flower season, and see what we could do in producing five or six flowers on the plant.

Prof. Valandigham, Purdue University. The Chrysanthemum is a nice flower and king of all flowers. To get nice flowers it is not best to have too many stalks or branches. The more branches allowed has a tendency to weaken the plant. Some plants will take more nitrogen than others and it requires a chemical analysis to find this out.

D. W. Cox, Crawfordsville. I wish to ask if you don't think it would be advisable, in growing plants in open places, to surround them with a wind break, something like a tight fence to keep the strong wind from the plant, they are so liable to be broken. Wind passing over the plants causes a rapid vibration and not unfrequently much damage is done in this way.

Mr. Dorner. To make good plants they should have a free circulation of pure air. In case of winds, which cause vibrations, of which Mr. Cox speaks, if they can be protected it would be a good idea.

Mr. Valandigham. Cow manure is the best fertilizer we can get; it is much better than bone dust, which does not impart its merits the first year. Analysis shows this to be the fact on grain and other things.

Mr. Hunt. Mr. Dorner, would you do away with all shade entirely?

Mr. Dorner. Yes, sir; no shade at all.

W. H. Lawrence. At our show at Tomlinson Hall Mr. Riemen exhibited some fine plants. I would like to hear from him.

Mr. Henry Riemen. If properly cut back it may be done as late as the middle of September and they will produce fine flowers. Some of the best I had were cut back that late. In getting late Chrysanthemums, if you keep them back until January you will find if they lose their leaves growing in open ground they will produce new shoots and make leaves. I have read an article from H. Campbell, of England, on this subject, in which he said the same thing. I have tried it and it is fine.

Fred. Dorner, of Lafayette, read the following essay on

"VALUE OF EXHIBITIONS."

There are different opinions about the value of floral exhibitions to the florist. A good many do not understand it, and think if they are not able to carry off some of the first premiums it will not pay them to attend. "What shall I trouble myself," they say; "it is of no benefit to me. I can not compete with them. They have too much advantage over me." Again, with others it is an entire indifference to progress, to the increase and the elevation of our business. Again, there are some blinded with envy and jealousy. They can not see any good in a public exhibition because they are afraid a neighbor might get ahead of them. And still others do not want to be burdened with any work arising from such an undertaking, and simply stay at home.

First, let us see to the value in general common to us all; next, of the value to the individual exhibitor, and last to the ability of any florist as an exhibitor. As to the general value common to us all, we must not lose sight of that when any progress, any achievements are made in any of the different trades of life. Not only the individual, but the whole craft will benefit by it. Why not doubly so when these achievements are shown in a public exhibition, open to the inspection of all? It will show those interested where they can improve, and bring it to the notice of those who are expected to buy and cultivate their taste. This maxim is more applicable to our trade than most any other. Look at the progress made in the last decade, and also look at the improvement in taste pertaining to our goods. Make a bouquet in the style of ten years ago, and see whether you will find a purchaser for it. Our products are considered a luxury. We may just as well call music, painting, all those accomplishments of life, a luxury too. "No," you are told, "this is art." But look to the improvements of the one plant, the chrysanthemum. Is that not art too?

Music and painting do not belong to our daily bread; neither do our flowers. But see how closely they are interwoven in the wants of civilization. Our flowers have a same mission to fulfill. While our cereals, fruits and other plants are the

prose of plant vegetation, our flowers are the poetry thereof. Who can shut his eyes to the influence of the floral kingdom and civilization; who is not aware of the progress made in floriculture, and who will stay behind—a straggler behind the procession of progress. Where can we do the most good to ourselves, the elevation of our business, and to the public in general, than in a grand exhibition of our productions, where we can learn from each other by inspection of each other's products, by a social exchange of ideas pertaining to our business. But, also, where is a better place to cultivate the taste of the people, to show the value of flowers in a civilized country, to the home, as comforts in grief and sorrow, as well as to express our joys and pleasures, than in a grand exhibition of our products? When we show our work to the best advantage—show the beneficial influences on mankind—will that not create a love, a desire to possess them? When people consider flowers just as necessary as other enjoyments of life, is that not of value common to us all?

Now let us look to ourselves. Was not our show of last fall an improvement on the one before? Does that not show improvement in our products? When our success is heralded all over the country is that not of value to the trade? May one live in Indianapolis, or the farthest corner of the State—yes, more—if one never paid any attention to an exhibition, they all will benefit by it. When these reports are read any lover of flowers will go to the nearest florist and want to see such glorious flowers. Lucky the one who can show them. Your visitors will feel proud if such flowers can be bought at home, and will you not rise in their esteem? Is this benefit not mutual? Is it not of common interest to us all to have our products, our beautiful flowers, the poetry of nature, elevated to the standard of those things which make life cheerful and pleasant, and become therefor more of a necessity than a luxury. Is increase and elevation of our business not of value—a gain to be enjoyed by all and worth while working for?

As to the value attainable by the individual exhibitor, certainly the ones carrying off the prizes may not only be ahead of so much compensation for their work, but the established fact of having the best is far more worth. A point gained in honest competition is of great value and worth while to work for. The pleasure to see your efforts crowned, the beneficial influences on your business, the rising esteem among your fellow-men, are all factors helping to increase your business. I can not over estimate the value of my winning prizes at our exhibitions. I felt it very plainly. You may have a better lot of plants in your greenhouses than shown at an exhibition; a judge of plants and flowers may readily admit that, but will the public in general do so, too?

We can not all receive first prizes, but nevertheless we will share in the achievements, as they are the largest contributors to the increase and elevation of our calling.

The main feature at our exhibitions is the show of the Chrysanthemums; it is certainly in the reach of every florist. Now, please let me ask you, is there one among you who will admit he can not grow a Chrysanthemum? Will any one admit his inability in taking an active part? The principal exhibitions all over the country is the show of the Chrysanthemum, and rightly so, for no other plant will repay all the work put on so well, and no other plant is so well in the reach

of every florist. If not every florist wishes to grow specimen plants he can surely grow specimen flowers. I think the cut flowers are just as much of an attraction as the plants. This was fully shown at our exhibition last fall. What else will prevent you from taking an active part?

My brother florists, let me entreat you, throw away all indifference, banish all jealousy and selfishness, do not envy your brother florists for any achievements ahead of you; rouse yourself from that lethargy; cast away good enough; fall in line, that in our onward march let our motto be the elevation of our calling. In close phalanx let us move on; in union is strength, and victory will be ours.

DISCUSSION.

J. D. Carmody. It is a good paper and just to the point. One of the great drawbacks for the last few years is jealousy. This is being banished by these good sensible words we are hearing in this essay. No one can dispute the great good growing out of the exhibitions of our work.

Mr. Hicks, Battle Ground. I wish to ask if persons visiting the Association are allowed to take part in the discussions?

Pres. Carmody. Any persons who are visiting the Association and can say anything that would be of interest we would be pleased to hear from them.

J. S. Stuart, of Anderson, read the following address on

"ELEVATE YOUR CALLING."

Mr. President and Members of the Society:

On receiving a request four weeks ago from our worthy Secretary to prepare a short paper for this meeting, my first impression was that I could not do such a thing, and the more I thought on the subject the more reasons I could find for not attempting a thing that so fittingly belongs to a florist that has demonstrated without a doubt, by years of unceasing labor and undaunted perseverance, that floriculture is a success. In my judgment a person of this character, of whom there are many in our State, and quite a number present at this meeting, should on such occasions as this present one, use great freedom, mingled with an abundance of plain and definite descriptions of the various obstacles that every one must meet, yes, and overcome before he can be a successful florist. I next began to consider in my mind some of the subjects that could be entertained at this meeting with profit, and to see if I could, as the man said when he slipped on the ice, "find my level." One could give us valuable information about the rose, which ones to grow on a small scale, and which on a larger scale, what kinds are best for general cultivation; also, why they wont grow well, bloom well, and do well for different florists under apparently the same treatment—in short, tell us a hundred and one things about this good old, but much improved stand-by, that every florist ought to know. Another, give some valuable facts and observations in regard to Carnations. The most profitable varieties for winter blooming. Their location in houses, kind of soil best suited to each, heat, moisture, ventilation, scab, rust, etc. Each and all

of these points are of interest to the grower. While propagation is an old and well worn subject, yet there are points being constantly developed that could be profitably discussed on occasions like this.

These are old chestnuts, but who of us can crack them? while another could take up the increasingly and deservedly popular Chrysanthemum. To be brief, there are so many, very many, things connected with the business that is full of interest to the wide-awake florist that he finds time indeed is too short to meet, investigate and overcome each and every one of the barriers to a successful business without the assistance of his brother florists. Out of the many themes and subjects that one can think of I have a few thoughts on the much needed and greatly neglected subject, "Elevate Your Calling." There are a great many kinds of callings that men can engage in that are useful and honorable and profitable, which, if faithfully pursued, are ennobling and elevating. And yet there are quite a number of these callings or vocations being entered and after a fashion pursued by ignorant, unwise or careless persons, whose career and end is anything but elevating, or he has failed to elevate anyone or to be elevated himself.

There are men in this business who have devoted years of hard, earnest and persistent labor to the cultivation of plants, spending hundreds and thousands of dollars to improve and enlarge their business, with grand success, and of these we say they have elevated their calling. How few there are of us that have started in the business that have made that grand and honorable record that is possible for a florist to do? God has, in his unsearchable wisdom, made flowers in vast numbers and countless varieties, with untold possibilities, to gladden the hearts and cheer the homes of rich and poor, high and low, young and old, sick and well; in fact, almost all classes, in all climes and under almost all circumstances—the grandest, dearest and should be the cheapest boon to man. Let us remember this thought, and elevate and advance these ideas on all suitable occasions. And in our hurry and bustle through life let us pause occasionally at least and consider the grandeur and nobility of the florist's business. He is God's agent or servant, called to work in harmony with his laws to increase this business and spread those hallowed influences further and wider, thus constantly leading man to a higher and broader plane. Surely there are but few if any callings that are more ennobling or elevating. It is said that all those that love God love his flowers. How grand if we could say, all those that love flowers love God. In these few thoughts I hope to cause us to think. My experience is somewhat limited, yet I have made some observations at various times causing me to think. That in many points the florist's business could be much improved and elevated, I will mention a few instances to illustrate my ideas.

First—In location of land and houses, in my estimation, many make very unwise selections. It may be on a clay knoll, a wet hillside, a steep bank of a ravine, or a cramped-up corner in town or city, or perhaps a shady dell. Doubtless you will say, "What better can I do?" While I can not, perhaps, give a satisfactory answer to all, I would suggest that before starting consider all things well. Better make a sacrifice at the start than to fight nature all through one's life. Elevate your calling by starting right.

Second—While it is an open and unsettled question as to the best plan and cheapest house to build, as well as to which way to slope the glass and how to ventilate. This can, to some extent, be settled by the good common sense of the person building, and the number of dollars he has to invest. But elevate your ceiling by raising the rafters, glass and door frames high enough to allow persons to pass through the house without bumping their hats or heads against them. The staging and beds can be raised as near the glass as desired. Board, stone or cement walks can be put in without a great cost, and will add much to the attractiveness of the place, as well as convenience. Visitors do not, as a rule, admire wading through mud and water in greenhouses. Some thrifty florists have very muddy walks at times in their houses. As to heating, circumstances modify much. We should use system and fuel that is most economical for our particular houses and location. I think the steam system is *good*, and natural gas a *first rate fuel*. While our houses should be kept in good order and such a degree of hospitality pervade them that all classes could visit them with pleasure and delight and speak of our greenhouses with commendable pride, I regret to say some are not that way. Get and keep good stock. It don't pay to nurse and retain sickly and diseased plants. Clean off beds and staging occasionally; give them thorough whitewashing before sand or soil is replaced. Exchange places with pots frequently, and if soil is stirred or changed often it will add much to the life of most plants. In some houses it looks as though certain movable plants had occupied the same position for years. Change them about, it gives freshness and variety. Thus our beds can be varied and improved greatly without much time or money outlay. Improvement is elevating in its tendencies. Under the staging, what is there? Or, rather, what is not there? Do you ever clean out under there? Perhaps another renovating would do some good. It has been said some women will sweep dirt under stoves, beds, bureaus, and such places *just* to hide it. But why does a *florist* throw everything under his benches? This, to my mind, is a weakness, and largely mars the tidy appearance that should characterize our places of business. Eliminate this trash and get it out. There is the work shed and packing rooms; confusion reigns in some of these. Is it so in yours? How are your boxes and tools? Where do you keep them? Can one man find any of these when they are wanted, or does it require all the hands and much time to find anything when it is wanted? Such carelessness as this is an expensive luxury, and should be indulged in only by the rich.

There are many things that could be observed which would greatly elevate our business. Every man of us should start in life with principle as thoroughly mixed with our makeup as blood is mingled with our flesh. If there are those who have started and are doing business in a different way, I would say become inoculated at once with the ever useful and indispensable ingredient to a successful business life, *Principle!* Inaugurate system in your time, in your office, in your houses and shops, in all your work and with your help. Have places for everything, and, when not in use, keep everything in its place. In so doing much can be saved in many ways. Be courteous to those in your employ, and don't expect more attention and devotion to your business from them than you are giving yourself. I plead for the boys. Many are working on low salaries, and find but

few words of cheer and still less of sympathy; but are expected to do the work of a well paid man. Such is tiresome in its tendencies. If possible, pay the boys a little more. Have them prompt and punctual. Whenever it becomes necessary to make extra time don't forget them on pay-day. These are little things, yet they help make up our lives. It is the little things that worry us. Little things often prevent us from succeeding. Then, again, little things give us great advantage in many instances. Let us brace up and renew our courage. Let us live to do some good and make others happy. Let us raise our standard of a practical business life. Show a friendly disposition to a brother florist. Not be parsimonious, cold, stiff or indifferent. Neither squirm, fret and stew because competition is abroad in the land, but, like men, let us be up and doing. Thus we may be contented and prosperous. Now, my brother florists, think on these subjects so poorly alluded to, and if perchance some one can gain any practical benefit therefrom, I shall feel that something has been done to elevate our calling. In our business lives let us remember that

Though the world smile on us blandly,
Let our friends be choice and few.
Choose our course, pursue it grandly,
And achieve what we pursue.

DISCUSSION.

M. A. Hunt, Terre Haute. Some of us have grown gray in the business. We should tender him a vote of thanks for the scoring he has given us. We do neglect our business too much. I think we should open our places so they would be more wholesome and acceptable to visitors.

"CARNATION CULTURE"

Was the subject assigned to W. F. Beach, of Richmond. He being absent the subject was discussed.

Mr. Law, Shelbyville. My experience is not extensive, and I would rather be excused from saying anything. I grow carnations in the open ground until the approach of frost. I grow them until they are large bunch plants forming buds, then put them on the bench and they produce nice flowers.

Mr. Carmody. Which kind give the most flowers?

Mr. Law. The white.

Mr. Carmody. Has it long branches?

Mr. Law. Yes sir.

M. Carmody. What kind of soil do you have?

Mr. Law. It is medium between black and light.

Mr. Hill. Mr. Dorner has had some experience with carnations; perhaps he could give us something that would be interesting.

Mr. Dorner. I have in my house an old stove with a five inch pipe running over the bench, letting it go out at the end of the building. I found by this

means I could keep the plants warm, but not of an even temperature. My carnations look well. They all have long stems, but it seems too hot above. The Silver Spray came up with one bud to the stem, and when the body grew they branched out and have four or five blooms on the stem. The Mrs. Cleveland I like very much; it is not a large bloom, but is a pleasing color.

J. D. Carmody. Perhaps Mr. Dorner has his own ideas about producing single flower carnations. The long stem has a demand amongst our customers. For long stems this arrangement will be a valuable thing. I hope some of the florists will make a trial of this and be able to report at our next meeting. It is something worth thinking about. This is the largest, best, and most interesting meeting we have had yet, and I have no doubt the interest will increase in the future.

E. G. Hill, Richmond. I do not know how it comes that Mr. Beach is successful with the Garfield. He had it in bloom before Christmas and had a full crop, while some of the rest of us did not have good success. I attribute it to the soil, which is a black clay loam. Our soil up above Richmond a few miles is a yellow clay loam, and our Garfields are just now coming in bloom. I am inclined to think there is something in this overheating process, and I think I shall try it another year myself. I have heard it stated that a healthy growth of plants may be had in this way. Mr. Dorner's carnations show the effect of overhead heat, but he has long stems and plenty of flowers.

Mr. Dorner. I see in the American Florist quite a good many are advocating this plan. Last fall I was at Mr. Newby's, at Logansport. He uses this overheating process; thinks it is good, and is very enthusiastic about it.

D. W. Cox. Early last spring I was in Mr. Newby's green-house. He had one or two pipes running over head. In his rose-house he had two and one-half inch pipe running overhead for forty or fifty feet, and under that pipe he had begonias that were in fine growth, and were loaded with bloom. He told me the begonias bloomed all last winter, and hyacinths on the opposite side and beyond the pipe froze fast to the ground.

On motion of Mr. Stuart the association proceeded to elect officers for the ensuing year, resulting as follows:

President—M. A. Hunt, Terre Haute.

Vice President—Anthony Wiegand, Indianapolis.

Secretary—W. G. Berterman, Indianapolis.

Assistant Secretary—John Hartje, Indianapolis.

Treasurer—Fred. Dorner, Lafayette.

W. H. Lawrence read a clipping from Vick's Illustrated Monthly, which was ordered incorporated in the proceedings of the association.

CHRYSANTHEMUMS—THEIR ORIGIN.

A German romance for every flower and Chrysanthemums are the first to ask for an honorable mention.

Chryssy was a devout maiden, who lived on a mountain on the Black Forest, and occupied her time in making her wedding garments, as all German maidens

do from the age of eleven, hence, when the good man comes, later on, she has her outfit and a large chest of linen, and knitting for the poor; on week days for her friends, and on Sundays for the poor, and it is considered no sin—charity covers the occupation with a corner of her broad mantle, but I fear if there were no Sunday the poor would often go barefooted in Germany. She was the pride of the village, and always wore Chrysanthemums when in season, hence her name. Loved by a Duke, she loved only the young priest of the little church, who returned her love and could only speak it through the flower. Finally, they flew, or escaped from the village, and after weeks of weary travel, saying their prayers night after night with leaves of the dried Chrysanthemums, living upon pounded corn and goat's milk, not daring to apply for food from the good farmers, for fear of detection, they arrived at a small village, and there remorse came to them, both fell ill, and a spirit appeared and she was clothed in a robe of purple Chrysanthemums. Can this be Remorse and Chryssy?

The legend goes on that she died, and that he remained where she was buried and grew these Remorse flowers until by the sale of them he had money enough to build a little church, he working day by day with the laborers in hewing the rock and aiding to erect the little chapel. He died and was buried near by.

I have visited the little chappel—deserted—and have been told that it is a shrine for plighted lovers, who go there to pray for their happiness, and that the ghost of Chryssy appears when any trouble is at hand, always holding in her hand the Remorse Flower. Simple as the legend may be, it gives one a sad impression of a royal colored flower, which, for mantel decoration, has no equal.

Highly complimentary comments on the work of Secretary Berterman were made, and he was voted an annual salary of \$50 for his services.

W. H. Lawrence reported as delegate to the State Board of Agriculture as follows:

MR. PRESIDENT: I have the honor to report that I attended the annual meeting of the State Board of Agriculture, as a delegate from this body, and received a cordial greeting from many of the members with whom I am well acquainted. I found a strong sentiment among the delegates in favor of building a Joint Horticultural and Floricultural Hall at the fair ground, and now that the bill has passed giving the State Board of Agriculture an appropriation of \$10,000 for each year for the next five, I feel assured that the hall will be forthcoming.

On motion of Mr. Hill the society adjourned until 7:30 P. M.

EVENING SESSION.

President Carmody called the meeting to order, and introduced Pierre Valandigham, of Purdue University, who delivered an address on

POINTS OF CRYPTOGRAMS.

I take for my task the cryptogamia familia of plants, Class 24, Cryptogamia or flowerless class of plants, according to the botanical arrangement of Linnaeus.

This class of plants differs essentially from all other plants in the peculiar conformation of the organs of reproduction, which are not formed of male and

female parts, like those of the higher classes of plants, but are of a nature altogether different, consisting either of buds under a particular form, or of vessels containing vegetable substances analagous to seeds, but differing in not being the result of impregnation, and in having the power of striking root indifferently from any point of their surface.

The internal composition of these vegetable substances which are denominated sporules, is, on account of their extreme minuteness, unknown. The specialist Wildenow describes Cryptogamous plants to be vegetables without any visible flower, and different from other plants in their external character, in which respect they also differ from each other. By the more modern botanists they are said to be distinguished from other plants by the absence of lymphatic vessels and of pores of the epidermis, but the latter character has been disputed, and neither apply to the three first orders of the Cryptogamia. This class of plants are divided into nine orders: 1. Filices; all the fern families. 2. Equisetacæ; the only genus of horse tail, with only seven species. 3. Lycopodina; this include all Lycopods and Selayinla. 4. The Marsilacæ, a single genus; *Isætes*, with two species, an aquatic plant. 5. The Musci; this includes all mosses and great varieties of greens resembling our common moss, and are often found in greenhouses growing in the soil where the plants stand in, and is a great nuisance to the gardener and greenhouse man. 6. Hepaticæ; this order of plants are closely allied to the algœa; some of the species also may be found in greenhouses, such as the *marcantiæ* and *lunelaria*. 7. Algæ; is a large order of plants, and they are familiar to everybody; they may be often found upon dead wood in the form like some fungi but different in form. This order contains some very curiously shaped specimens, and are often admired for their curiosity. 8. Lichens; this is a large family of plants, and may be found everywhere growing on the bark of living trees, on fences, upon rocks. Amongst this order are some very fine specimens; although small they are well worth observing. 9. Fungi; this order is extremely large and contains some very useful specimens for domestic purposes, such as the mushroom, and also contains some very destructive specimens to the vegetable kingdom, such as our black spot on roses; the vilot spot or disease, which is, I presume, a fungi of some genus.

This embraces the whole Cryptogamia, but we have some of the genus which are extensively cultivated amongst the florists, and that is the first order Filices or the fern families, which, as an universal rule, can not be discarded, and may be truly and surely said that they are here, came to be cultivated, and have found a place in every conservatory, however small it may be; and, furthermore, they have become great favorites during the past few years, and they are becoming more so from year to year. Neither can we wonder at this, for they are certainly amongst the most elegant and graceful of Nature's production. Unlike the orchids and many other rare plants, they are not exclusively the luxuries of the wealthy, but may be enjoyed by all who have a taste for them, inasmuch as many species may be cultivated by those who have no plant houses or garden whatever. Although we have but a few species in our own country, but in some parts of the tropics abound in ferns. We take, for instance, the Organ Mountains, in Brazil, on the slopes of the Indies they luxuriate and have been found growing there at a great

elevation, according to Mr. Alfons Spruce, one of our European botanical explorers. In Peru alone he found not less than 250 different species within a radius of fifty miles, and many were of the tree-fern order. The West Indies are also very abundant with this genus. In the British Islands there were found 340 species. Chili is also a great country for ferns; 160 species were found there. The Fijis also abound with them, and doubtless ere long they will be introduced to charm our eyes in this country again. In the enumeration of the ferns of the Island of Java upward of 450 species were described there alone. The Islands of Borneo, Sumatra, Malaga and the Phillippines abound with them, as well as the whole of the East Indies, and, in fact, very few of the latter country are at present in cultivation, though many of them are exceptionally fine and interesting. In Mexico great numbers exist. Some 300 species are described, few of which are in the present cultivation.

In Western Africa great quantities of ferns are found, and many of them species that are peculiar to that country. At Fernando, Po., some remarkable distance up the mountain may be found the magnificent *Cyathea Medularis*, where it is found in large groves. This may almost be called the king of ferns; in its fullest growth it attains a height upward of thirty feet. The Rachis and Hipites are densely covered with large black chaffy scales. Again in the Cape of Good Hope and South Africa a quantity of species are found there which have never yet been introduced in our gardens. In fact, they may be found in places where the atmosphere is sufficiently humid, from the humble species of one inch in length to the noble aborescent kinds rearing aloft their splendid crowns of fronds on stems from ten to forty feet high, beautifying the surrounding landscape and forming objects of individual grace and elegance which we are now only just beginning to realize for ourselves. Until recently we have known them by descriptions of travelers only. But now quantities of these large specimens of stems have been introduced to this country, especially of the Australian and New Zealand kinds, and magnificent specimens make their appearance at our horticultural exhibition, great encouragement having been held out by the different societies for their production, which speaks well indeed for horticulture, proving that it is steadily but surely developing a superior and refined taste amongst the community at large. For decorative purposes ferns stand unrivaled, their graceful and delicate fronds causing them to be appreciated by all persons of taste. Whether wanted for the embellishment of the conservatory or store, for the dining-room table, or the head-dress of a ballroom belle, or for bridal present, there is a beauty of outline which is never tiring to the eye. Looking at them from a strictly horticultural point of view they are grand plants for decorating purposes, of large conservatories or winter gardens, and the tree ferns are admirably adapted for mixing in with such plants as *Dracenas*, *Cordilinas*, *Chamærops*, *Sœforthia*, *Aracas*, *Auracarias*, *Dassylirons*, *Yuccas*, *Agaves* and other ornamental plants. The smaller species may be used amongst the smaller plants. It is often a great mistake by growers of this genus of plants in keeping a higher temperature than the plants require, and in many cases they are growing by many persons who do not know where their native country is, and in what latitude they are found. In order to be successful in the culture of

this plant, it is necessary to learn this as much as possible. Supposing we find a group of ferns at a great elevation, even in a tropical region, the treatment of such plants would be cool temperature. Second, plants found in the same latitude, but low down, this plant would require a stove temperature. A great many failures are the direct cause in not understanding the required treatment of this plant. In regard to the economic qualities of this genus there is very little to be said about them by the exception of a few, such as the Pith of *Cyathea Medularis*, which is eaten by the natives of New Zealand. Some of the stems of *Callipteris Esculenta*, the *Eperis Esculenta* and tubers of the *Nephrolepis* have also been used as a food when other articles were scarce. For medicinal purposes very few have been found, such as the *Ceterach officinarum*, *Scolopendrum bulgare* and a specie of the *Lastria* tribe. Some of the *Cibotium* species are very common in the Sandwich Islands, and have their stipes stripped of the long dense hairs, with which they were clothed, and shipped to California and Australia for the purpose of stuffing beds and cushions, but the time of their commercial value was short, as the wear and tear was too much for them, and were soon ground to powder, and it, the present time, is entirely out of the market.

The ferns also have a very ancient record, and have played an important part of the world history, and by many geologists they are often called coal plants, as the remains in the strata of coal formation have proven that vast quantities existed in an early period. The impression left behind them by their fronds show that they were similar in form to those we have now at the present time on the earth's surface.

In a careful consideration, we look now upon a mode of propagation of these plants. The best system is generally to grow them from spores, though some of the species have a creeping caudex, and are increased by cutting them into pieces, and each piece having a part of the roots and some of the fronds attached. Again, those kinds having an erect or tufted caudex, forming single or compound crowns, must be cut apart with a sharp knife, and also some of the roots with a portion of the fronds should be attached to each piece, and after this pull them to pieces and be placed in small pots, and with material recommended for the smaller species of ferns. When they are thus handled and potted they should be placed in a close moist place, and be protected from the strong rays of the sun. In regard to watering, give just enough to settle the soil, and when commencing to grow they may be removed to their previous places. In the growth from spores that is somewhat more complicated, if a good crop is desired, I would recommend in this case:

1. The compound of soil to be thoroughly baked in order to destroy the organic matter.
2. A good drainage composed of charcoal, the pot or pan to be one-third of full.
3. A required temperature from 60° to 85° Fahr.
4. To be protected from strong rays of sun, and to be supplied with bottom heat, and further minor details as published in Bulletin.

No. 20, on culture and experiment, with the Cryptogamia class. I state here, also, in regard to the germinating powers of the various species that this differs

remarkably. For instance, we take a quantity of spores of *Pteris asplenius gymno-grannas*, and nearly all our present adventures in cultivation their germinating powers varies very little from one another, and generally make their appearance in two or three weeks. On the other hand we have species which have been in the ground for months, but they generally are of the arboresceus kinds. In fact, in my own experiences, the *Diksonia antarctica*, *Cibotinus regalis* and *Chamnothera anahalasica* came up after being in the seed pan fifteen months. Two of them were tree ferns, and the last named the bird's-nest fern. I have not the least doubt that many seed-pans are thrown away on account of the spores not germinating, and that many are not aware of such facts. That some require a longer time than others; therefore, I would advise the operator not to be in too great haste to dispose with a seed-pan if he knows he has such spores to handle, which require a year and over to germinate. In conclusion, the year past, trials have been made in the growth of spores with two different soils and waters, so as to ascertain the safest method of growing young ferns. Two pans were selected, one containing an equal division of leaf-mold loam and sand, and pure water was selected to moisten this natural composition of soil when becoming dry. The second pan had an equal division of soil, as the first pan, but in this case the soil was baked and lime-water was used. Here we find two different soils. One with the nitrogen of organic and inorganic matter, the other, which had been baked, lost through this process the organic matter, and was reduced to ashes, or inorganic or mineral matter. These two different soils were kept moist, and was applied from the bottoms of the pans through a hole, and never applied on the surface, on which pulverized brick was scattered over, on which the spores rested to germinate. It is here necessary to state that both pans were well provided with drainage composed of charcoal. A pane of glass was laid over the pans in order to prevent evaporation, and in keeping the soils damp.

In the course of time the process was looked upon, and it was found that ferns could be better cultivated in the baked soil and lime water, and that this soil was kept in a pure state and free from all organic and vegetable matter. On the natural soil and pure water, when heat was applied to them, vegetable and animal life sprung up of various kinds, which, in the course of time, destroyed the surface of the soil, and the result in many cases was a failure; and in particular, where a long time is required for some species to germinate, the baked soil and the lime water were found to be decidedly the best and was not disturbed with worm and other organic matter. The germinating power of these spores required two or three weeks; after that time a green surface was observed, which is the first appearance of the prothalia. The plants remain in this stage of development from five to eight weeks, at which time the first frond makes its appearance from the base of the prothallium. As the first frond gains in strength the prothalia, on the other hand, loses its strength and finally disappears. Its period of existence is from three to four months. When the young fronds keep on growing, it becomes a necessity of transplanting, which may be done with the point of a knife, and placed into another pot or pan; and as they keep on growing it is necessary to keep on dividing until they are sufficiently strong enough to be placed singly into small pots, and if wanted for fine specimens it is necessary that they should be

shifted when becoming pot-bound into larger sized pots, into a mixture of a compost of good turfy loam, leaf mould and sand, equally divided, with an intermixture of small broken pieces of charcoal, and at all times well provided with good drainage, which should at no time be allowed to become closed up. For the regular yearly shifting the month of February is universally practiced as the time to shift large specimens, as at that time they are nearly over their rest and at the point of commencing to make their second growth. If waited until they have already started in growth and an attempt was made to shift them it would materially injure the young fronds. It is therefore that the early part of that month is generally selected, before the sun attains much power, and before many new fronds have begun to unfold. The temperature found to answer admirably for the cool species is from about 40° to 50° F. during winter. For the several other tropical species 50° to 60° F. in winter, and from 70° to 80° in summer, and by the addition of sun heat it may occasionally rise to 85° and 90°.

DISCUSSION.

J. D. Carmody, Evansville. This I presume is one that is not well understood, the cultivation of ferns and lower order of creation, but we have got to progress, and we do not deny the beauty they present mixed with cut flowers. We have got to come to it and study out this one step in the advancement and culture of ferns. I want to hear an open and free discussion on this question.

Mr. Hill. The results made by Mr. Valandigham confirms my own observation regarding fern spores. I notice by taking a clay bank subsoil, and if found there in right quantity the fern spores will germinate better than this soil containing organic matter. We make a mistake by putting them on peat and soil of a like nature.

J. D. Carmody. I have raised some nice ferns. I took a soft, half-burnt brick and spread the top over with clay taken from the bottom of the cellar to the depth of about one-half inch, and set the brick about one-half the depth in the ground, placing in a warm shady place, and sprinkle my fern spores on top of the clay, keeping a uniform condition of heat during the summer, and in a short time the whole surface was well covered with green and gray ferns. The soft brick draws the water, and by keeping moisture there and the same condition of temperature the result was gratifying indeed.

Mr. Valandigham. All these ferns require a long time to come up. To get good ferns you have to keep the soil clear of organic matter, and lime water will do that.

Mr. Carmody. Would not lime do that?

Mr. Valandigham. Yes. There is organic substance in water.

President Smart, of Purdue University, being present, was invited to address the Association, and responded as follows:

Most of you know that the United States Government has recently established an Agricultural Experimental Station in the various States, and one in this State at Purdue University. The purpose of this Station is to experiment with agriculture and growth and diseases of plants, and cultivation and diseases of ani-

mals. There is also a slight intimation that we may experiment in floriculture; that is the reason we are making some effort in that direction. There are three stages in the development of a country; first, cutting off the timber, then raising grains, and, lastly, the growing of tubers. The fact you are exempt, and floriculture is reaching the top end of the ladder, so we are here to say that we wish to interpret the law in a liberal spirit. We have green houses, and we aim to do better in the future than in the past. We have a man in that position, and we shall do more in the cause of floriculture. It is a very important thing for the State, and we will be glad to do what we can to further the interest which has called you here. If you would like to hear Dr. Stockridge, who is general director of the whole affair, I will introduce him to you, and you can listen to him for a short time. I promise you coöperation and every effort our means will allow for the advancement of floriculture, and I assure you there is no science that is more refining than the study of botany.

Dr. Stockridge, Purdue University. I did not come here to make any great speech before you. However, being called on, I will speak a word in regard to what we are undertaking at the Experimental Station, at Lafayette. First, I would like to say that we interpret the law of Congress in a liberal way, and that the principle of our institution for Indiana is, first, to encourage the growth of products of the agricultural community. Whatever estimate may be placed on floriculture it has made eminent proof already of its value. It is certainly that branch of agriculture from which every man, woman or child is capable of deriving most comfort, happiness and pleasure, and I believe that you will all second my claim that the evergreen and American flowers are typical of breath and beauty, and of our American life. This law of Congress which established our institution in Indiana we interpret to include floriculture and horticulture, which we propose to introduce at the institution. You would like to know what we propose to do, and how we propose to accomplish this work. We are exerting ourselves to the best to aid the agricultural community in every way possible. We are paid for that and we are going to do it. In any way you believe we can assist you in your work we are there, ready and willing to do so. You are all of you experimenters, but the individual cultivator, on his farm or in the house, is not equipped as we are there. We will help you overcome these obstacles, and all we ask is for you to tell us what you need. We are sending out our Bulletin to everyone who requests them. If you will send us your name the Bulletin will reach you every month, and immediately on publication. We aim to develop new varieties of flowers, and take up certain branches of industry and more thoroughly develop them. We shall take up certain kinds of seeds and give them proper tests. It is found that twenty-five per cent. of the seed on the market are adulterated, and have lost their virtue in the growth of old seed. No body ever heard of old seed on the market, nevertheless some of them are. Many of them lose their vitality by age. We can be of much assistance to you in this respect. We will send them to you and tell you what percentage or how many in a hundred will germinate. These are some of the ways in which we aim to be a help to you in floriculture and horticulture of Indiana. Whenever you meet an obstacle you can not overcome we

want to help you. Whether we will succeed or fail we will report results. If we fail we will ask your help.

J. D. Carmody. This society extends thanks to the gentlemen from Purdue University. This society has been a benefit to the florists of Indiana. We have grown rapidly in numbers, with a prospect of increasing all the time. I am glad you have come to our assistance, and recognize us as a body worthy of your attention.

Dr. Stockridge. If the Secretary will hand me a copy of the names of your members I will have them placed on our mailing list, and will send you a copy of the Bulletin regularly each month as soon as published.

M. A. Hunt, of Terre Haute, addressed the society on

“VIOLETS, THEIR CULTURE AND DISEASES.”

Since acquainting the Secretary with the subject of this paper, an able article has appeared in the American Florist from the pen of a Milwaukee grower, which so fully covers the ground as to cultivation, and is also so in accord with my own experience, I will pass this division of the subject with only one or two suggestions. In relation to soils most suitable, having tried several with varying results, am satisfied a heavy loam is the best, by this I mean one which will not bake or crack, though the admixture of sand be very slight. As to the method of growing, I do not believe, as far north as we are, it is advisable to grow them in frames, either with or without fire heat, the uncertainty of the weather rendering it difficult to clean the plants properly, or gather the flowers with any degree of regularity. Give them bench room near the glass in a house by themselves, where the temperature can be kept under perfect control. I have found them to thrive best when kept about ten degrees above freezing at night, and on sunny days maintaining as low a temperature as possible without chilling the plants. The small grower who requires but a few each day for his own work, would, in my opinion, save money by buying of a brother florist who raises them in large quantity, or of some commission house, rather than undertake to raise a few in sash, or in a house with other plants.

Of the disease to which the violet is subject much has been written during the past year, but I have failed to see any cause assigned that was not disproved by the practice of other growers in different localities, methods which in the one case resulted in failure, in the other proved successful.

So serious has this disease become, many large growers have entirely abandoned their cultivation, and it will be remembered Mr. Seibrich, of New York, offered a reward of \$100 to anyone who would solve the problem, and notwithstanding many writers have given their experience with the pest, as well as advanced theories and surmises as to its cause, I still have to learn that any of them have drawn on friend Seibrich for the reward. The true solution may be as far in the future as ever, but in a visit not long since to Mr. John Cook, of Baltimore, Md., he was able to show results, the fruit as he believes of careful thought, observation and experiment, which it seemed to me would be of interest to violet growers to know.

It will be remembered Mr. Cook was the originator of that charming variety, Marie Louise, which was first placed on the market in 1872, and he now has two new varieties, the rose-colored Mad Millett, offered last spring, and another a sport from Swanley White, which he calls Robert Garret, not yet disseminated. In color this resembles Neapoliton, but its promise of supremacy is in the great size of the flowers. The original stool, as seen in January a year ago, literally bristled with buds, while one fully expanded flower measured one and one-eighth inches in diameter by actual measurement. Mr. Cook grows about 120 sash of violets annually, and a varied experience of forty years in their care, coupled with the magnificent appearance of his plants at the time I saw them, would seem to show that whether his theory is correct or not, his practice brings success. He stated that the disease appeared with him about ten years ago, Marie Louise, which he had then been cultivating about eight years, being so much affected as to become practically valueless. The plants of this, so badly affected that season, were grown on his lowest bottom land, the disease showing itself about August 1, previous to which the stools had been very large and fine. The following season, having some planted in frames for summer growth on his highest land, he noticed early in September that the stools under the sash rests, or bars of the frame, were clean and healthy, while those exposed to the full rays of the sun were badly affected with the disease. At first he thought this was the result of shade, observation in another line tending to confirm him in this conclusion, and this was the pear blight. Among his fruit trees was a row of pears, west of which ran a row of large evergreens. Both rows were at such an angle as to cause a complete shade to cover the pears from eleven o'clock through the day. Every tree so shaded was free from blight, while trees at either end of the row in the full sunlight were much diseased; but to return to the violets. Careful and patient watching convinced him it was not the shade that prevented, but the dew that caused the mischief, and his theory is this: The same fever producing agency—be it what it may—which will bring a strong man down when exposed for any length of time to the dews and miasmatic influences of the night air, is the producing agent of the disease in the violet. The drop of dew on the leaf exposed to an August sun evaporates, leaving whatever there may be of poison in a concentrated form on the leaf. Acting on this theory, he plants all his violets for summer growing in narrow beds, and as soon as there are any signs of dew, covers them by stretching water-proof fibre cloth on frames so prepared as to keep the cloth well above the plants, thus securing a circulation of air. This covering is carefully removed in the morning, and the same process gone through with each day until they are housed in winter quarters.

Whatever may be thought of the theory, as the cause, the cure with him seems to be effectual, as plants grown near the others and given the same treatment in every way, save in the matter of night covering, are badly diseased. We are apt to look upon long continued, intelligent and successful methods as proof of the system followed, and if any of our violet growers desire to test this method for themselves, and should it prove as effectual with others who have been troubled with the disease, as with Mr. Cook, I have no doubt he could be prevailed upon to recieve Mr. Seibricht's check for \$100.

DISCUSSION.

President Carmody. It is an excellent paper, and touches a place near the heart, for there is nothing in floriculture nearer the heart than the sweet-scented violet. That is the belief of every florist. To the person whose olfactory organs are not in a condition to enjoy the scent of this rare flower the beauty to him is more than fragrance. Let us hear an animated discussion on this theme.

Anthony Wiegand, Indianapolis. I have not had much experience on that point. I will say, however, that I have raised a few fine plants in pots.

J. D. Carmody. I have a house in which I aim to plant violets and carnations; it is nine or ten feet wide. The glass used is three feet in solid sash. I aim to plant early and put them in the side that is covered with sash, where they can have the benefit of the sunlight. I think I can grow violets on that side and carnations on the back side. It is a go between a cold frame and a greenhouse.

M. A. Hunt, Terre Haute. I would like to inquire of those who have had experience in growing violets whether they have been troubled with disease. Our friends at Purdue have agreed to help us out of our troubles. If any one has been troubled in that way I would like to hear a report. I have raised them for ten years, and never have had disease among them; they take care of themselves pretty much. You recollect, perhaps, of some articles being written where the writers maintained that disease was caused by weakness of the plant coming through the winter. This theory is disproved by my theory as well as others. I have not changed my stock for ten years, and have not experienced any bad results.

CHRYSANTHEMUM EXHIBITION—DISCUSSION.

William Langstaff, Indianapolis. A chrysanthemum show at Indianapolis pays some and some it does not pay. The florists of this city have the bulk of the work and hardship in getting it up. Now, if there are any means whereby this work could be made interesting to those in the rural districts and induce them to take it up, then it would be much better for Marion County. Last year that show was principally made up by Marion County florists, and then you gentlemen come here and take our premiums from us and leave us to clean up the room, which is about all we get. [Laughter.] I think, Mr. President, the chrysanthemum show at Indianapolis is a very worthy display, and locates in the mind of every lover of the flower a disposition to grow it. It is something we all want to do. While you take away the premiums you don't take away the sales of chrysanthemums at Indianapolis. Our sales have been good, and we attribute it to this show. I want it increased instead of decreased. I think we should not let this show go by.

Chas. Reiman. As regards myself I am favorable to this show. I think a chrysanthemum show will create a demand for plants, and we will find it of much benefit to us.

E. G. Hill. Mr. Langstaff refers to the rural brethren, he only got hold of one end of the string, in Marion County. If he were at Richmond and had to go

through the mud to get to the car, and then after he got here trouble comes in again to get to the hall, he would not begrudge anybody the premiums. It is not a small matter to get together a display such as we got together last fall. It requires our whole force of eight or nine men quite a while to get ready. If you don't live near the hall it is somewhat of a task to put things in shape; still it seems to me it would be a step backward for us to refuse our support, or contribute to the chrysanthemum show. Yet many of the members of the society think it is a good deal of work and considerable burden in the outcome and does not justify the labor and expense, but this is a mistaken idea. The fruits which come to us are worth all this trouble. People attend the chrysanthemum show who never saw flowers to love them, yet they go there and are easy victims of "Flora's sweet wilds." I do not want to force this on the society if they don't want to go ahead and help found and perpetuate this show in the city of Indianapolis.

J. D. Curmody. I believe the chrysanthemum show has brought Indiana florists to the present state of interest, and it has held us together, and if it were not for it we would not be a society as to-day. I am not in favor of giving it up.

Mr. Dorner. I am very much in favor of the show, and will do all I can to keep it up.

Mr. Hunt. I have heard it intimated that there was a feeling of hesitancy on the part of members of the Society in conducting these shows, the liability of which there is of a failure and loss. Mr. Hill has stated that he would be one to guarantee some help. I wish, Mr. President, that you would call on the members here and see how many would stand with him in this matter as suggested.

Mr. Langstaff. I move you first that we have a chrysanthemum show, and then see how many will stand up.

W. S. Gordon, Florist U. S. Arsenal, Indianapolis. I second that motion, and I will give my reasons for doing so. I am a Marion County member, and attribute my success to the show. It is a good thing; it brings the florists not only of Indiana together, but from other States. Last year we had florists from Louisville, Cincinnati, and other places. It is like the State Fair, and is where the culture of new plants is discussed. Of course, as it has been in the last two years you can not say that it has been a success, but not a failure. We are in our infancy yet, and if we will all put our shoulders to the wheel and work together for the show, we will make a success of it. "If at first you don't succeed, try, try, again." If we give up for little failures we never will succeed. Business men many times start out at first with a big load on their shoulders, but through perseverance they overcome these obstacles, but if they give up under these difficulties they are gone. I want us to have this show right along, it is becoming more popular every year.

Mr. Hill. I do not want you to think it was a failure the first year, it was a success. We had a good exhibit of chrysanthemums, which were admired by friends from Cincinnati, Chicago and St. Louis; it is a matter of great pleasure to meet florists, not only from Indiana, but from other States. I wish Richmond was large enough to hold this show, I would invite you there. If we go into this matter and don't succeed, the Society should pay the deficits, and not ask five or six men to do it.

D. W. Cox. In case the society would not shoulder the responsibility it would not be fair to ask half a dozen men to assume it. Every member of the society should guarantee to share the responsibility alike.

John Hartje. I am in favor of holding another chrysanthemum show this year. It was finally decided to hold a chrysanthemum exhibition in 1889.

On motion of Mr. Langstaff, the following were appointed a committee on Chrysanthemum Exhibition, viz.: E. G. Hill, Richmond; J. D. Carmody, Evansville; Henry Rieman, Indianapolis; D. W. Cox, Crawfordsville; W. H. Lawrence, Brightwood; Fred. Dorner, Lafayette; Mr. Law, Shelbyville.

Mr. Hill. Will this committee designate the amount of premiums?

President Carmody. That will be left to their discretion. If the society chooses to limit the amount of premiums, here would be a good place to do it.

Mr. Wiegand. It is too early to talk about premiums, it is nine months ahead of time. The premiums should be carefully considered.

W. H. Lawrence addressed the society on

"BEAUTIFYING HOME GROUNDS."

I am glad of this opportunity to assure the members and friends of this society that it is my pleasure and pride to do anything which will contribute to the true prosperity of this people. The interests I strive to promote are inseparably linked with the more material, though no more real, interests represented in this paper. I shall content myself then with a few general thoughts that are at least kindred to the text that I have chosen. I express these thoughts in a plain way and believe that they are so important that they ought to be kept constantly in view by the people of this State.

It is our desire and aim to impress it upon the minds of every reader of this paper that each and every ornamental tree that has been planted, each flower that is now resting in its winter's bed and each vine or shrub that has found a place at the old home, helps to bind, with a firmer grasp, the cords of union and love for that home. No one can make the home of childhood, or any other home, too happy or too attractive. To a certain extent there is a warmth of soul awakened by the interest the farmer or the man of the city or the town takes in adorning the surroundings of his home, that affects each member of the family toward the others.

For years I have heard the doctrine preached that this world is all a wilderness. Such may be the case in isolated instances (take those who have lived along the Yuma desert, at our western frontier as an example) where men and women live and die with little or no knowledge derived from the beautiful things of this earth.

It should be the duty of every one to make their homes as near a reflection of nature as they possibly can. Every house, to a certain extent, should be a place where loveliness in every shade and form is made a patent influence in moulding and harmonizing the family circle. Plenty of trees, shrubs and vines outside and

flowers inside, with an united admiration for the same, by all of the members of the household, will make them united in everything else. In such spots are found more congenial families than anywhere else.

Some good poet once said:

“ Make your home beautiful, bring to it flowers,
 Plant them around you to bud and to bloom;
 Let them give life to your loneliest hours,
 Let them bring light to enliven your gloom;
 Make your own world one that never has sorrowed—
 Of music, and sunshine, and gold summer air—
 A home-world whose forehead care never has furrowed,
 And whose cheek of bright beauty shall ever be fair.

* * * * *

If you can do so, oh! make it an Eden
 Of gladness and beauty—remember 'tis wise;
 'Twill teach you to long for that home you are needing—
 That heaven of beauty beyond the blue skies.”

In catering to a tasty embellishment of home surroundings no vast amount of wealth is at all necessary. No one is so poor but what they can, as each spring returns, sow a bed of flower seeds or buy a few bulbs and vines from the neighboring florist. They can train a vine or plant a tree if they try. These little acts can be performed at spare moments with the expense of only a small amount of time. To the beginner I would not advise that he commence by laying out serpentine walks or drives, building costly rockeries or buying rare plants, but instead go to the forest and bring in a growth of vines, plant them in a tasteful manner, mingle with them a few well ordered trees from the neighboring woods, and, with the flower beds scattered here and there, there will be an attractiveness that will help to make life happy.

Not all of us enter into the love and cultivation of flowers with exactly the right spirit. Sometimes I am led to believe, from observation, that I am acquainted with a few florists who do not cultivate a taste for flowers only for the dollars that are in them. In other words, they have not an inborn love for flowers. They seem as though they do not care whether their own or their neighbors' children become jubilant and “kick up their heels” over the first wild flower that bursts its petals in the spring or not. Would that everybody could believe that flowers are what they are worth in themselves instead of for an occasional bouquet or mantel decoration.

To those who have not given the culture of the flower, shrub and vine the proper amount of study we say, *Commence this spring!* The mode of planting, training, trimming and general cultivation is easily learned if one sets about his work in downright, good, hearty earnest. Write to the seedsman, florist or nurseryman (if they have not already sent their catalogues), and they will mail publications giving hints, so that there will be no difficulty in readily understanding them. In any good agricultural, horticultural or floricultural journal can be

found weekly and monthly installments of this class of knowledge. The ladies of these households I allude to are the first ones to take the initiatory steps; they *always* have some sense of the beauty and fitness of things in their relations to surrounding objects, which are inseparable to giving a pleasant expression to the arrangement of the flowers, ornamental trees, vines and shrubs.

My observations lead me to believe that many of the small towns and villages in this and other States, where home surroundings have been looked after, owe more to the shrubs, vines and flowers that embellish their grounds than to the fancy cottages and piles of brick and mortar. It is economy in the strictest sense of the word, this planting and ornamenting the front dooryard, and every far-sighted person will look upon it as an investment that will pay as good a rate of interest as money put out in any other form. It is a well known fact that if a person wishes to secure a fancy price for anything it is always essential that they make it appear attractive—catch the eye of the purchaser, is the idea. Looking at the subject for the future for those that are to follow, I urge the reader each year to plant something around the sacred precincts of his or her home, and cultivate whatever you plant for your own pleasure and profit, and as monuments of your regard for future generations. There is no recreation more invigorating and interesting than the culture of these flowers and shrubs; they are the promoters of health, exercise, pure air and pleasant emotions.

When one is making his garden or lawn beautiful, when he tastily arranges the same, he is doing good to others. The beauties he thus creates can be enjoyed by his family, his neighbors and the stranger that passes. Thus, I claim, when we beautify our outward homes we are, to a certain extent, enriching others. Sometimes from observation I am led to believe that the love for the beautiful is largely a matter of education, and as I gaze upon the bare front yard, and the weedy fence corners, I am led to exclaim: The reason these people have so little taste for home adornment is because they never had anything at home to adorn. It is with this class of people the floriculturists and horticulturists of Indiana should work.

Methinks I hear some farmer, after he has read this, say: "I don't want any crooked walks up to my house—straight ones good enough for me. They'll save me and the old woman heaps of travel." Another, perhaps, will say: "Git out with flowers! They won't bring me any greenbacks. I've got a family to keep." I am free to admit that the farmer has plenty of labor to perform; at the same time there is not one of them but what wastes more time, ten times over, than would take to beautify their front yards, and make them a model of grace and loveliness. They owe it to themselves and those about them, and if they would take an active part in the cultivation of that love of the beautiful, their families would be greatly benefited.

Again, I contend that the front view of very many of our homes should be made beautiful and attractive, by so doing the toil incident to the owner's life, will, at least, seem lighter, and his children as they grow up will bless him for having caused their lives to bud amidst the natural objects of beauty. Limit the ground and well develop the same; extensive lawns, noted only for their barrenness, is a

grand mistake. Many of the outward portions of homes in the east are ornamented and beautified by the mother and her children, and the same can be done all over Indiana. Ofttimes their work is equal to that performed by some landscape gardeners. I know of no brighter picture of American home life than a thrifty, productive farm, surrounded with convenient arrangements, the house full of industrious occupants, and a neat lawn in front, embellished with dwarf trees and a flower garden near by teeming with floral beauty. Make the labor in the lawn a delightful recreation rather than an irksome toil. Learn to look upon your trees, vines and plants as living beings and watch them grow and undergo changes. A few lessons in this direction will cause the whole family to acquire a taste for the same, and, eventually, it will be found that there is a substantial and innocent pleasure therein, which will have a strong tendency to strengthen attachments for home. No matter what way you look at it, here will be found food for intellectual and moral improvement.

No matter how magnificent may be the farm or town home, pay the architect all the money you please, and the home will not be what it should be if the front surroundings are neglected. A building with less pretensions in structure and architecture, surrounded, in part, with shrubs and flowers, judiciously planted, in my judgment, is the much preferable home. Anything that makes the front of a home present a cosy appearance meets my views. Climbers trained on the porch, grass neatly cut, walks clean, and the rose, lilac and other bushes and shrubs here and there, leads me to believe that there is comfort and happiness within. In almost every instance a beneficial influence must emanate from such surroundings. When the day's work is done it seems to me as though there is more pleasure in returning to a home like this than one with a wood pile, a leach for making soap, an old sled or two and cow pens and chicken coops occupying a front position, and the fence corners of the same filled with wild mustard, burdock and so on. This subject furnishes food for several good-sized volumes, consequently the whole ground can not be reviewed, as I would like to, in one paper.

Nature has given the average farmer, in this State, at least, a better opportunity to beautify his home and make it an attractive and lovely spot, for less capital invested, than any other class of persons.

In my travels over the State, very often I have been impressed with the absence of beauty in the little enclosure in front of many of the houses in town and country (this, perhaps, in part, is the cause of this paper), sometimes called front-door yards. I am in favor of doing away with the word door-yard, and, as one of our legislators would say, substituting in lieu thereof the word lawn. Doubtless, many of my listeners (and readers hereafter) can call to mind a farm or farms of two or three hundred acres, used for the herds and flocks, and scarcely one foot reserved near the home for the family. I will keep on the outside of these homes and urge that there be more lawns where the forest tree can stretch out its long branches to meet and welcome the passer-by, and the owner's family to come and sit in its cool shadows, where the birds of the forest will delight to make their homes, build their nests and rear their young; where the vine's low rustling leaf will make music around that home.

I insist that there be more carpets of grass, with their ground-work of green. Plant here and there the peœna, tulip, violet and other flowers in the rich mold, and nature will do the rest while the good wife is busy with other cares; the sun will shine upon them, and the showers will water them while their loved owners are wrapped in sleep. Would that everybody who has an opportunity could view these matters in the same light that I see them, then they would not be so much neglected.

Once more I assert that nature has given these people a better opportunity to beautify their homes and make them attractive with flowers, shrubs and vines, than any other class of persons, and I have no doubt but what any of you, Mr. Florists, would gladly, for a few dollars, "rig them up" somewhat after the manner described.

One reason for this paper, on this ever patriotic day is, it is with a hope that some sentence or word may be dropped that may lead to thought, thence to action, in elevating the tone of the average home surroundings. Nature's drapery is a subject worthy of study by every one. I refer to the climbers. There are many of them, and certainly there are one or more among their number that would please the eye of most any one. If properly trained they will change the home of extreme poverty to a spot attractive; they will hide unsightly objects and give an appearance of cheerful rusticity to all that part of the home where they are trained. It is to be regretted that too many of our people treat these little objects of taste with too much disapprobation, while on the other hand they should add them to their homes for the benefit of their wives and children.

If any one has no appreciation for nature's drapery it is not right that he should mar the happiness of his wife or his children. Heedless indifference often destroys a portion of the happiness that ought to surround a home. Men still live, move and have a sort of a being, who laugh at their wives and daughters for wasting their precious time each spring cultivating and training these climbers and flowers. Abject poverty *alone* is the *only* reason I can now assign why any one is justified in depriving his family of the happiness which is derived from the cultivation of tasty home surroundings. For the last time I urge that those who have little or none of these outside adornments, commence this spring to adorn your grounds in some way. Your home and everything that contributes to its happiness concerns the owner thereof *especially*, but at the same time when a tree or vine is planted look to the future, and see that the view is not obstructed.

To some present this may seem to be a dry subject, but I am of a different opinion, and I am glad to know that this is not the first time I have had my "say" on this subject. I expect to keep on with the good work. I was kindly invited by your worthy Secretary to say something, and I chose the subject above alluded to because I have seen so much that does not meet my views of home adornment and beauty from an outside standpoint. It only now remains for me to thank you cordially for your kind attention, hoping that it may be among the dispensations of Providence for all of us to gather under this roof one year hence, in increased numbers, and that each succeeding year will bring us nearer to the realization of our promises and expectations.

Adjourned to 10 A. M.

SATURDAY MORNING SESSION.

President Carmody called the Society to business at the hour designated.

J. D. Carmody. This committee on the chrysanthemum show should meet in March, on call of the Secretary, and send out circulars that the fall show would be held as usual, and invite hearty coöperation, stating that a premium list would be prepared and forwarded the last of July.

Mr. Cox. That premium list should be issued as soon as possible.

E. G. Hill. We are all interested in this show. I would like to have a premium offered for plants grown on the English plan, it would be interesting, and premiums on bush plants. We should offer premiums on cut chrysanthemums with stems three feet long; to do this we should have an understanding that an early meeting is necessary. I expect this committee would be authorized to correspond with Cincinnati men and arrange for that show to come either a week earlier or a week later than ours.

J. D. Carmody. The question is whether we can get along with one meeting of the committee. If we can have it early and perfect arrangements, it might then be left with the Secretary.

Mr. Berterman. We should have a meeting at the Buffalo convention.

Mr. Hill. We should have the premium list out next month.

John Hartje. There is another thing we should suggest to that committee, that is, that all plants should be on a single stem.

The Committee on President's Address, through its chairman, Mr. W. H. Lawrence, submitted the following report:

Gentlemen of the Indiana Florists' Society:

We, your committee to whom was referred President Carmody's address, beg leave to report that we have examined the same and find that it is an excellent paper in many respects.

We heartily endorse this sentence: "Make the presence of flowers a necessity to the more perfect enjoyment of society." We quote it because we fear some brother florist might have overlooked it at the time of its delivery. Don't forget it. Establishing horticultural societies, "instituting frequent flower shows," and "cultivating the love of flowers among the masses" meets our heartiest approval. We also heartily endorse the President when he says the people at large should be educated into a fondness for flower growing: "Teach children the culture of plants, and as they grow up flowers will be a necessity to their more perfect enjoyment" is a noble sentiment, and your committee hope every florist in Indiana will keep the sentiment foremost in his mind.

The Executive Committee was instructed to meet the Executive Committee of the Horticultural Society and make arrangements to have a floral display in connection with the summer meeting.

The Committee on Memorials reported the following:

RESOLUTIONS OF RESPECT.

WHEREAS, In view of the loss we have sustained by the decease of our friends and associates, Henry Hilker and Miss Christine Dorner, and of the still heavier loss sustained by those who were nearest and dearest to them; therefore, be it

Resolved, That it is but a just tribute to the memory of the departed to say that in regretting their removal from our midst we mourn for those who were, in every way, worthy of our respect and regard.

Resolved, That we sincerely condole with the families of the deceased on the dispensation with which it has pleased the Divine Providence to afflict them, and commend them for consolation to Him who orders all things for the best, and whose chastisements are meant in mercy.

Resolved, That this heartfelt testimonial of our sympathy and sorrow be forwarded to the families of our departed friends by the secretary of this meeting.

E. G. HILL,
JOHN HARTJE,
M. A. HUNT.

Committee.

Fred Dorner. I wish to extend the thanks of myself and family for the sympathy you have given us in our sore affliction, the loss of our daughter, and for the beautiful emblem of flowers presented.

E. G. Hill, Richmond. I know you appreciate our sympathy in your bereavement and our hearts were deeply touched. I can say the death of your daughter touched my heart as it never has been touched. My heart went out in sympathy to your wife and family in your affliction, and I am sure that the members of the society shared with me in giving that same sympathy in this your sad affliction. We appreciate the kindness of heart and valued service your daughter rendered to this society last year and year before. She was dear to us on account of her willingness and honesty in working for the best interest of the Indiana Florists to make our exhibitions a success. I do not know of any one who contributed more than your daughter did to the success of those exhibitions.

W. H. Lawrence was appointed a delegate to the State Board of Agriculture.

The query box was again opened, and found to contain the following:

On motion of Mr. Hill, President Carmody was instructed to prepare a design for the Indiana Florists, as an emblem of the society, to be used for letter heads of the association.

Third Question. "What is the best method of labeling plants placed on benches?"

DISCUSSION.

J. D. Carmody. We want to adopt some uniform method, so anyone can go into a green house and keep the run of the plants. This way of some labeling one way, while others adopt different methods does not work altogether satisfactory.

Wm. G. Bertermann. This is an important matter, and one in which all florists are interested. I, therefore, move that this question be laid before the National Association, and see if some definite plan can be agreed upon.

J. D. Carmody. I find the greatest trouble among florists is they don't label at either end of the bench. And really, when you come to the nicety of it, it is best to label every plant; if you are going to sell you have to label any way. Oftentimes you have to stop when you are busy, to label, when if you have them done you are all right.

Mr. Berterman. How about propagating, would you label every plant?

Mr. Valandigham. Yes, every plant, then there will be no mistakes occurring.

Fourth Question. "Why are plants taken from State institutions and conservatories for public receptions, when they should be in good condition at all times?"

DISCUSSION.

W. G. Berterman. In the last year or two the practice is to take out plants at the State institution conservatory to public receptions in the city. When people come to this conservatory the florists are expected to have the plants in good condition; how can we expect to do this when they take out plants to those receptions and have them spoiled?

Mr. Hill. It is wrong for the State to furnish plants for private parties. Does this practice extend outside of State officials?

Mr. Berterman. Yes; at Tomlinson Hall they had them at the inauguration, and other receptions. I suggest that we recommend that florists should not take plants out of the State conservatories for any occasion outside of institution purposes.

J. D. Carmody offered the following resolution, which was adopted:

Resolved, That the Society of Indiana Florists protest against the practice of taking specimen plants from the State Conservatory for public and private decoration; for the reason these plants should be always an attraction in the public conservatories and are expected to be in fine condition, and are more or less injured by being removed from natural growing places. This protest is in compliance with the opinions of florists who have these plants in charge.

"Why are cyclamen not fragrant in this country, while they are in the old country?"

Mr. Carmody. I have found cyclamen fragrant in this country. All are fragrant in Europe. I have been told by travelers that in Australia no flowers are fragrant.

Mr. Bertermann. If the State Board of Agriculture builds a hall for the Horticultural Society I think this association should appoint a member to assist in superintending it.

The following Executive Committee was appointed by the President:

E. G. Hill, Richmond; B. L. Auger, Fort Wayne; J. D. Carmody, Evansville; Charles Rieman, Indianapolis; Lawrence Heintz, Terre Haute.

The exhibition in the room adjoining the meeting room was quite attractive, and contained some excellent plants and cut blooms.

Plants by Hill & Co., Richmond, Ind.—A beautiful *Amaryllis* and one standard *Azalea* covered with fine blooms; also some excellent cut blooms of new rose, *Madame Hoste*, and other varieties.

Anthony Weigand, Indianapolis.—Some fine Cimararies, Azalea and Indicaa.
Jens. Larsen, Indianapolis.—Some fine bedding plants.
Mrs. Henry Hilker, Indianapolis.—Begonias, Lillium Harrisii, etc.
Berterman Bros., Indianapolis.—Azaleas, Hyacinths and Rhododendrons,
selection of cut flowers and photographs.
Some fine Carnation cut blooms by Fred Dorner, Lafayette.
Some fine seedling Carnations by Theodore Bock, Hamilton, Ohio.
Some cut Chrysanthemum blooms by Mrs. Henry Hilker.
Patent ventilator apparatus by J. D. Carmody, Evansville.

LIST OF MEMBERS.

W. S. Gordon	Indianapolis.
J. A. E. Haugh	Indianapolis.
Mrs. Keeley	Indianapolis.
John J. Keller	Indianapolis.
Theodore Bruckner	Indianapolis.
Geo. Youngerman	Indianapolis.
E. L. Williams	Indianapolis.
Ernst Huckride	Indianapolis.
F. C. Huntington	Indianapolis.
Wm. Langstaff	Indianapolis.
John Baker	Indianapolis.
Henry Schwarz	Germany.
Ed. Bissell	Richmond.
Henry Michel	St. Louis, Mo.
Julius Joachami	Indianapolis.
M. A. Hunt	Terre Haute.
Bernie A. Fohl	Indianapolis.
J. D. Carmody	Evansville.
Henry W. Rieman	Indianapolis.
Wm. Blackman	Evansville.
E. G. Hill	Richmond.
Henry Rieman	Connersville.
B. L. Augar	Fort Wayne.
H. Fulle	Richmond.
D. W. Taylor	Indianapolis.
E. A. Nielson	Indianapolis.
Wm. Hack	Ben Davis.
J. Sidney Stuart	Anderson.
J. A. Evans	Richmond.
Jacob Schulz	Louisville, Ky.
Lawrence Heintz	Terre Haute.

Geo. W. Doswell	Fort Wayne.
Lorenz Schwartling	Indianapolis.
John G. Hejnl	Terre Haute.
Charles Rieman	Indianapolis.
Wm. G. Bertermann	Indianapolis.
Ed. Bertermann	Indianapolis.
John Bertermann	Indianapolis.
Anthony Wiegand	Indianapolis.
Mrs. Henry Hilker	Indianapolis.
W. H. H. Hoss	Indianapolis.
John Hartje	Indianapolis.
D. W. Cox	Crawfordsville.
T. Hardesty	Cincinnati, O.
J. Larsen	Indianapolis.
Joseph Hejnl	Jacksonville, Ill.
W. H. Lawrence	Brightwood.
Fred Dorner	Lafayette.
Mrs. Ellen Butcher	Irvington.
William Hartje	Indianapolis.
A. M. Troxell	Knightstown.
W. F. Law	Shelbyville.
W. O. Foley	Greensburg.

INDIANA HORTICULTURAL SOCIETY.

Transactions of the Indiana Horticultural Society for the year 1888. Being the proceedings of the twenty-eighth annual session, held at Indianapolis, December 4, 5 and 6. Also the proceedings of the summer meeting held at Richmond, and the State Fair meeting. Together with reports from local societies, vice presidents' reports, papers, etc.

C. M. HOBBS,
Secretary.

OFFICERS OF THE INDIANA HORTICULTURAL SOCIETY FOR THE YEAR, 1888.

President—Allen Furnas, Danville.
Vice President Fourth District—Jesse C. Stevens, Centerville.
Vice President First District—Joseph A. Burton, Mitchell.
Vice President Second District—A. Glenn, Columbus.
Vice President Third District—W. A. Workman, Greencastle.
Vice President Fifth District—G. W. Grant, Pulaski.
Vice President Sixth District—I. D. G. Nelson, Ft. Wayne.
Secretary—C. M. Hobbs, Bridgeport.
Treasurer—Daniel Cox, Cartersburg.

EXECUTIVE COMMITTEE.

J. J. W. Billingsly, Indianapolis.
L. B. Custer, Logansport.
W. H. Ragan, Greencastle.

VICE PRESIDENTS AND THE COUNTIES COMPOSING THEIR RESPECTIVE FRUIT DISTRICTS.

First District.—Joseph A. Burton, Vice President. Crawford, Daviess, Dubois, Gibson, Green, Knox, Lawrence, Martin, Orange, Perry, Pike, Posey, Spencer, Sullivan, Vanderburgh and Warrick.

Second District.—A. Glenn, Vice President. Bartholomew, Brown, Clark, Dearborn, Decatur, Floyd, Franklin, Harrison, Jackson, Jefferson, Jennings, Ohio, Ripley, Scott, Switzerland and Washington.

Third District.—W. A. Workman, Vice President. Boone, Clay, Clinton, Fountain, Hendricks, Monroe, Montgomery, Morgan, Owen, Parke, Putnam, Tippecanoe, Vermillion, Vigo and Warren.

Fourth District.—J. C. Stevens, Vice President. Blackford, Delaware, Fayette, Grant, Hancock, Hamilton, Henry, Howard, Jay, Johnson, Madison, Marion, Randolph, Rush, Shelby, Tipton, Union and Wayne.

Fifth District.—G. W. Grant, Vice President. Benton, Cass, Carroll, Fulton, Jasper, Laporte, Marshall, Newton, Porter, Pulaski, Starke, St. Joseph and White.

Sixth District.—I. D. G. Nelson, Vice President. Adams, Allen, Dekalb, Elkhart, Huntington, Kosciusko, Lagrange, Miami, Noble, Steuben, Wabash, Wells and Whitley.

CONSTITUTION OF THE INDIANA HORTICULTURAL SOCIETY.

1. This society shall be known as the "INDIANA HORTICULTURAL SOCIETY.
2. Its officers shall consist of a President, six Vice Presidents (who shall be elected one from each Fruit District, and by virtue of their election, members without fee for the time for which they are chosen), Secretary, Treasurer, and Executive Committee of three.
3. The President shall preside at and conduct all meetings of the Society, and in his absence the Vice Presidents, in their order, shall perform the same duties.
4. The Secretary shall record all the doings of the Society, collate and prepare all communications, etc., for the public press, and pay over all money received from members, or otherwise, to the Treasurer, on his receipt; shall receive and answer all communications addressed to the Society; establish and maintain correspondence with all local, county, district and State Horticultural Societies, and secure by exchange their transactions, as far as possible, to aid the President, as an executive officer, in the dispatch of business relating to the meetings of the Society; preparing and publishing circulars and notices of horticultural and similar meetings of general interest, and report to the annual meeting of the Society an abstract of the matter that has come into his possession, which, with its approval, shall become part of the transactions for the present year.
5. The Treasurer shall collect and hold all funds of the Society, and pay out the same only on the order of the Secretary, countersigned by the President.
6. The officers shall be elected separately and annually, by a ballot vote, and hold their office until their successors are elected.
7. The object of the Society being to collect, condense and collate information relative to all varieties of fruits, and dispense the same among the people, every member, except the Vice Presidents, shall pay into the treasury one dollar a year for the purpose of publishing, and other expenses: *Provided*, That members of local Horticultural Societies may become members by paying into the treasury, through their respective local organizations, the sum of fifty cents each. Any person interested in horticulture may become a member by forwarding to the Treasurer or Secretary the fee of membership.
8. Every member shall be entitled to a copy of the transactions of the society as often as the same shall be published.
9. The President, Secretary and Executive Committee may call a meeting of the Society at any time and place they may consider advisable, by a notice of thirty days in the public press.

10. It shall be the duty of each Vice President to make an annual report to the society upon the fruit crop in his respective district, together with such recommendations and suggestions as may seem best for the iuterests and advancements of horticultural knowledge within said district, which shall be, by the Secretary, published in the transactions of the society for the year in which such reports are made.

11. This society shall hold its annual sessions on the first Tuesday in December in each year, and at such place as the society shall designate at its previous meeting. It shall be the duty of the Executive Committee to procure rooms and make all necessary arrangements for the meetings of the society, to make out a programme of business for each meeting, and attend to such other duties as the society may from time to time direct.

12. The officers of this society shall constitute a Board of Horticulture, five of whom shall constitute a quorum for the transaction of business, the officers of the society to be officers of the Board, said Board to meet immediately on the adjournment of the Society, and afterwards on their own adjournment. It shall be the duty of the Board of Horticulture to collect horticultural information, and they shall be authorized to employ an agent or agents to visit different portions of our State or adjoining States to collect information of general interest, and shall be authorized to draw on the treasurer for money to pay the expenses of said agent or agents, when there is money in the treasury not otherwise needed, and said Board shall make full and accurate reports of their proceedings, with all horticultural information collected, to the regular meeting of the society.

13. By-laws and alterations in the constitution, for the purpose of governing further wants of the society, may be enacted by a majority of the members present at any regular session.

MEMBERSHIP.

HONORARY MEMBERS.

J. M. Smith	Green Bay, Wis.
H. E. Van Deeman	Washington, D. C.
T. J. Burrill	Champaign, Ill.
N. Ohmer	Dayton, Ohio.
I. D. G. Nelson	Ft. Wayne, Ind.
R. T. Brown	Indianapolis, Ind.
J. C. Teas	Carthage, Mo.
*Z. S. Ragan	Independence, Mo.

LIFE MEMBERS.

E. Y. Teas	Dunrieth.
Joseph C. Ratliff	Richmond.
C. M. Hobbs	Bridgeport.
Joe A. Burton	Mitchell.
Andrew T. Skanklin	Wild Cat.

* Deceased.

ANNUAL MEMBERS.

W. H. Rice	Bainbridge.
Prof. J. Troop	Lafayette.
A. Glenn	Columbus.
Daniel W. Ronk	New Ross.
Mercer Brown	Spiceland.
H. M. Simpson	Vincennes.
Dr. C. C. Connett	Madison.
Will E. Stacy	Lyons.
Dr. T. V. Gifford	Kokomo.
O. C. Sterling	Camden.
Solomon H. Hayes	Elizabethtown, O.
J. L. Frank	New Amsterdam.
John M. Watson	Mauckport.
W. H. Ragan	Greencastle.
W. A. Workman	Greencastle.
T. S. Teas	Spiceland.
Eph. Hodges	Paragon.
F. R. Holland	Hope.
Wallace Ragan	Fillmore.
Homer F. Frost	Edinburg.
J. S. Van Vleet	Franklin.
Prof. W. C. Latta	Lafayette.
John Bird	Raysville.
M. V. Strickler	Bogstown.
J. H. Parks	Bourbon.
L. B. Custer	Logansport.
W. C. Bennett	Scotland.
H. F. Prill	St. Omer.
Wm. Turley	River Vale.
Sanford Furry	Indianapolis.
S. C. Himbrook	Switz City.
L. Yenowine	Edwardsville.
W. C. Reed	Vincennes.

LOCAL SOCIETY MEMBERS.

HENDRICKS COUNTY SOCIETY.

Dr. Allen Furnas	Danville.
S. H. Frazier	Danville.
Daniel Cox	Cartersburg.
Wm. Lietzman	Clayton.
Melville Ensminger	Danville.
Dandridge Tucker	Danville.
B. H. Carter	Clayton.

BOARD OF AGRICULTURE.

MONROE COUNTY SOCIETY.

J. S. Dinsmore	Bloomington.
Geo. P. Campbell	Bloomington.
L. Milt Rodgers	Bloomington.
W. M. Bunger	Bloomington.
W. M. Farmer	Bloomington.
W. B. Farmer	Bloomington.
J. S. Johnson	Bloomington.
Samuel Dinsmore	Bloomington.
Frederick Fess	Bloomington.
Benjamin Dunn	Bloomington.

HANCOCK COUNTY SOCIETY.

Alonzo Tyner	Greenfield.
W. B. Walker	Greenfield.
J. F. Coffin	Westland.
H. P. Anderson	Sugar Creek.
B. F. Stinger	Charlottesville.
J. K. Henby	Greenfield.

WAYNE COUNTY SOCIETY.

Jacob D. Hampton	Votaw.
Benjamin Stratton	Richmond.
Thos. B. Morris	Richmond.
Daniel Bulla	Richmond.
John T. Morris	Richmond.
Miss Mary Parry	Richmond.
Walter S. Ratliff	Richmond.

DELAWARE COUNTY SOCIETY.

Granville Cowing	Muncie.
----------------------------	---------

HAMILTON COUNTY SOCIETY.

A. S. Davis	Westfield.
-----------------------	------------

MARION COUNTY SOCIETY.

J. J. W. Billingsly	Indianapolis.
W. B. Flick	Indianapolis.
Franklin Taylor	Indianapolis.
Peter Raab	Indianapolis.
E. A. Eickhoff	Indianapolis.
Sylvester Johnson	Irvington.
Levi Hill	Irvington.

Wm. Mustard	Broad Ripple.
F. Beeler	Indianapolis.
J. G. Kingsbury	Indianapolis.
W. H. Lawrence	Indianapolis.
J. H. Vajen	Indianapolis.
J. W. Apple	Oaklondon.

GRANT COUNTY SOCIETY.

Snead Thomas	Marion.
------------------------	---------

LAWRENCE COUNTY SOCIETY.

Morgan Kean	Mitchell.
H. G. Curry	Mitchell.
J. I. Pope	Mitchell.
Ransom Burton	Mitchell.
W. F. Sears	Orleans.
J. H. Miller	Mitchell.

RANDOLPH COUNTY SOCIETY.

Marion Harter	Winchester.
D. E. Hoffman	Winchester.
T. M. Kiser	Winchester.

FLOYD COUNTY SOCIETY.

Edwin Yenowine	Edwardsville.
Martin V. Hanger	Edwardsville.
Hector Garrett	Edwardsville.
L. Yenowine	Edwardsville.
Jonathan Beard	New Albany.

ANNUAL MEETING OF THE INDIANA HORTICULTURAL SOCIETY,
HELD AT INDIANAPOLIS, DECEMBER 4, 5 AND 6, 1888.

FIRST DAY.

At 2 P. M. Tuesday the Society was called to order by President Furnas, who proceeded at once to deliver his annual address.

PRESIDENT'S ADDRESS.

Fellow Members:

Allow me to congratulate you upon the successful year to fruit growers just drawing to a close. With the exception of late frost in some localities which injured the strawberry crop, we have had as near a year of universal success as we ever meet in Indiana. The grape was almost entirely free from rot and the apple from speck. This year the old Vanderver Pippin seems to have taken a new lease of life. Even the yellow Bellflower made partial amends for a long abuse of confi-

dence. White Winter Pearmain and Winesap, where not too crowded, gave smooth fruit; and Famuse, so popular with our northern neighbors, this year put on Michigan airs, and showed its handsome, ruddy face free from scab or scar.

The labors of the society the past year we feel have not been in vain. On March 31st I visited, by invitation, Bloomington, and assisted in organizing the Monroe County Horticultural Society, with encouraging prospects, and obtained nine new members of our State Society. Those of you who attended our last State Fair will remember the very creditable exhibit of this Society, and we believe the only county exhibition of fruits there. The character of the fruit showed at a glance the adaptation of Monroe County to fruit growing, and especially the apple. We most sincerely hope that these members will stay with us and bring along others with them.

SUMMER MEETING.

By invitation of the Wayne County Horticultural Society our State Society held a short session on the grounds of John F. Miller, half mile north of Richmond, in July. The day previous was spent in visiting orchards, fruit lots, gardens and lawns in the vicinity of Richmond, extending as far north as the farm of Jacob Hampton's, some miles away. This day was one of the bright spots in the experience of every one present. The entertainment and accommodation afforded visitors from abroad might possibly be equaled somewhere, but surpassed nowhere in Indiana.

The veteran George W. Campbell, of Delaware, Ohio, Secretary of the Ohio Horticultural Society, was on this excursion, and added much to the entertainment. These excursions afforded abundant material for discussion at the meeting next day.

For this meeting's exercise, as well as the detail of observations made in the excursion, I must refer you to Secretary Hobbs' forthcoming report.

If seeing is believing then this kind of demonstration must be the proper way to convince anyone of the good to be derived from such meetings.

On the 18th of August I met a body of fruit growers at Greenfield, and assisted in organizing

THE HANCOCK COUNTY HORTICULTURAL SOCIETY,

With a good but small beginning, and obtained six memberships for the State Society. At this meeting we first learned of a new seedling grape originated by J. F. Coffin, of Westland, in Hancock County. The report of this grape is about this: It has been fruited several years, has passed the severest winters without protection and no apparent injury. The berry and bunch, as well as quality, were favorably noticed by good judges at the State Fair meeting, where it was on exhibition and for the first time introduced to the public. I hope the State Society will take the necessary steps to ascertain the real merits of this new candidate for public favor, and if actually found worthy, after sufficient trial, then, with an appropriate name, recommend it for general cultivation. Indiana has an apple, a raspberry, and why not a grape?

THE STATE FAIR MEETING.

The meeting at the State House on Wednesday evening of the State Fair, was productive of much good. Several varieties of fruit were identified. In mentioning this meeting to Nicholas Ohmer, I learned that the Ohio horticulturists have been in the habit of holding two or three sessions at their State Fair, and think them not only of interest, but profitable. We all want to go to the State Fair, and why not let it be understood by all who read our reports that a Horticultural meeting will be held at our rooms in the State House, on at least one night of every fair, so that visitors from abroad who wish to attend our meetings may know that the evening will be as profitable in an educational point of view to the farmer as the day has been.

WHAT WE HAVE NOT DONE.

It would not take so long to tell what we have done as what we have not done. In a survey of the field of labor before us, there is much presented for our consideration. One of the many things is this: Is it possible to devise some more reliable means of meeting the actual necessary expenses of our Society? In publishing our last report the President and Secretary had to give their joint note for the printing and binding. This was done on the credit of the association in the hope that the incoming Legislature will make the allowance which the preceding session so recklessly neglected. All our members will have to button-hole their respective Senators and Representatives on this matter, and should the aid heretofore extended be permanently withdrawn, the usefulness of this Society will be so crippled that so far as publishing a report is concerned it might as well throw up the sponge. However, we flatter ourselves that no such untoward circumstance will occur, and thus make Indiana the exception in the sisterhood of States in this necessary aid.

ANNUAL MEETING AT INDIANAPOLIS.

To my mind there are many advantages in the permanent location of our annual meeting in our Capital city. Heretofore we have made no effort in decorating our room. This is certainly a mistake. The necessary apparatus, furniture or material for arranging for our exhibition should, to some extent, be *permanent fixtures*, so that nothing would be wanting but the fruit and plants to fill them, when we come here to our meeting. This can not be done for meetings at first one place and then another over the State.

One of our near allies, and that should be a co-worker with us is the florist. We must have his aid and coöperation, and in return we must help him when we can. After tender plants are once in this room no risk is incurred by the severest weather; hence, the opportunity for that sort of attraction here, that could not be always afforded elsewhere. The central location of this city, and being the railroad center of the State, makes this place accessible to all. Reduction of railroad rates can be more easily secured than at places not so favorably situated for passenger transportation.

The location permanently of the winter meeting at this point need be no bar to the missionary feature of our work. This can be accomplished through summer meetings, such, for instance, as we had at Richmond, and I most sincerely hope these “*ad interim*” meetings will be continued.

MORTUARY.

Since our last annual meeting two of the workers in this organization have passed from works to rewards.

Major Z. S. Ragan departed this life June 10, 1888, at his temporary residence in Santa Anna, California, whither he and remaining family had gone on account of his impaired health. He was born in Mercer County, Kentucky, April 17, 1817. In 1834 he removed with his parents to Indiana, in Hendricks County, where he made his principal home until a few years after the war of the rebellion, when he removed to Independence, Missouri, in 1869. The nursery business and fruit growing were his favorite pursuits, and there are few old orchards in Hendricks County that do not have trees from his nursery. Much as he was attached to these pursuits he left all at his country's call for soldiers at the beginning of the war of the rebellion, and enlisted in the service of his country, remaining until honorably mustered out, when peace was made. He was a brave soldier, a good, Christian citizen, and a kind husband and father.

A few days ago I received the intelligence of the death of Thomas A. Lloyd, of Indiana, on October 30, 1888. He was born December 22, 1834, in Butler County, Ohio. He was the first Secretary of this Society at its organization, being most of his life a resident of Indiana. He was educated at Franklin College. In 1862 he moved to Indianapolis and engaged at the bar.

In accordance with the recommendation of others, which I cordially accept and approve, I would suggest appointing a committee on obituaries, who may collect a more complete detail of facts and incidents of these loved and honored co-workers with us.

The society being informed of the death of Z. S. Ragan, of California, and T. A. Lloyd, of Indianapolis, both honored members of the society, on motion of W. H. Ragan, to appoint a Committee on Obituaries, the following committee was appointed: W. H. Ragan, Daniel Cox, Sylvester Johnson.

On motion, a committee of three, J. G. Kingsbury, J. Troop and J. G. Henby, was appointed, to whom the president's address was referred.

The secretary submitted his annual report as below.

SECRETARY'S FINANCIAL REPORT,

For the Fiscal Year Ending October 31, 1888.

Disbursements.

Postage	\$13 25
Express	3 65
Printing	16 50
Total	<u>\$33 40</u>

Salary	\$250 00
Printing reports	100 00
	<hr/>
	350 00
	<hr/>
Total	\$383 40

Receipts	
Received on office expenses	33 40
	<hr/>
Balance due	\$350 00

Warrants Drawn on the Treasurer.

Warrant No. 1, Dec. 8, 1887, S. Johnson, expenses as president	\$10 00
“ “ 2, “ D. Cox, “ treasurer	5 00
“ “ 3, “ Myra Trueblood, shorthand reporting	20 00
“ “ 4, “ Prof. T. J. Burrill, expenses	10 00
“ “ 5, “ President J. M. Smith, expenses	3 00
“ “ 6, “ Prof. J. M. Coulter, expenses	5 00
“ “ 7, May 29, 1888, W. B. Burford, part pay, printing reports	54 12
“ “ 8, Oct. 28, 1888, C. M. Hobbs, office expenses	33 40
	<hr/>
Total	\$140 52

C. M. HOBBS,
Secretary.

The Treasurer submitted his report, as follows:

TREASURER'S REPORT.

Receipts.

From December 6, 1887, to October 31, 1888—	
Cash on hand	\$74 52
Membership fees	78 50
	<hr/>
Total	\$153 02

Disbursements.

From December 6, 1887, to October 31, 1888—	
Paid on orders from Nos. 1 to 8	\$140 57
	<hr/>
Balance on hand	\$12 50

On motion, the President appointed a committee of two (Sylvester Johnson and W. B. Flick), to which committee the financial report was referred.

On motion, the President appointed W. H. Ragan, Dr. Robinson, Jas. C. Ratliff and I. D. G. Nelson, a Committee on Exhibit and Nomenclature.

On motion, Fielding Beeler, A. Glenn and L. B. Custer, were appointed a Committee on Resolutions.

Dr. Furnas. I believe it would be a good idea for us to hold a short session in the exhibition room sometime during the meeting, where we can have the fruit before us, and discuss their qualities. We might learn much in this way. It will be, however, as the meeting directs.

W. H. Ragan. The idea of holding a meeting in the exhibition room I regard a good one, and might be made both interesting and profitable. I suggest that we assemble in the exhibition room to-morrow for that purpose, at the hour of meeting, 9 o'clock A. M.

It was so decided.

J. C. Ratliff, former trustee of Purdue University, submitted the following report of that institution:

I am requested by the Secretary of this Society to prepare the usual annual report concerning Purdue University. I will, with the permission of the Society, give a brief history of the University during the time that I have been connected with it as your representative.

I became a member of the Purdue Board in August, 1875, and served continuously until August, 1888. During the last seven years of this time I was the president of the board. The thirteen years which mark the period of my service in Purdue University have witnessed a most remarkable change in its facilities in the scope of its instruction and in its growth. From a very small beginning it has become one of the strongest and best equipped technical schools in the West. Its faculty has increased from six to twenty-four; its students from sixty-six to four hundred.

During the first year of my connection with the institution the total number of students in the College proper was seventeen; the total number for the present year, I am informed, is three hundred, seventeen times as many as there were then. I think that I am justified in saying that the quality of the work done has increased in quite as great a ratio as the number of students has increased. The following table will show the growth of the University in respect to the number of students, during my term of office:

<i>Year.</i>	<i>College.</i>	<i>Prepara- tory.</i>	<i>Both.</i>
1875	15	49	64
1876	17	49	66
1877	60	79	139
1878	65	101	166
1879	76	119	195
1880	86	117	203
1881	113	141	254
1882	111	127	238
1883	106	113	219
1884	112	101	213
1885	127	132	259
1886	159	156	315
1887	230	162	392
1888	269	99	368
1889 (estimated)	310	100	410

During this period also the Main University Hall has been built and thoroughly equipped; the Peirce Conservatory has been constructed, and the farm buildings and agricultural hall have been erected. During the past five years the University has made its most rapid advancement.

The attendance in the college proper has increased nearly three-fold, the enrollment during the present year being nearly three hundred. The following schools have been added, viz.:

1. A School of Pharmacy.
2. A School of Domestic Economy.
3. A School of Civil Engineering.
4. A School of Applied Electricity.

A very great improvement has also been made in the School of Agriculture by the addition to the course of a large amount of Horticulture and Veterinary Science. A Physical Laboratory has been opened and equipped, and the capacity of the Chemical Laboratory has been doubled.

Purdue University has now one of the best equipped Mechanical Laboratories in the country. This was built three years ago. It includes drawing-rooms, wood-shop, foundry, machine shop, and testing laboratory. It is finely equipped with apparatus and machinery—forty machines, in all, which are driven by a forty-horse power Atlas engine. Here one hundred and twenty students receive daily instruction and practice.

With reference to the special work in horticulture, I am glad to report considerable progress. An experimental orchard and horticultural plat, comprising ten acres, has been recently laid out.

Last year the following varieties of fruit were growing, viz.:

Seventy-five varieties of apples.

Eighteen varieties of pears.

Twenty-five varieties of cherries.

Thirty varieties of plums.

Two varieties of peaches.

Twenty-five varieties of grapes.

Eighteen varieties of currants and gooseberries.

Twenty-five varieties of raspberries and blackberries.

Seventy varieties of strawberries.

Besides these there were tested on the plat the following different varieties of vegetables:

Seventy-six varieties of potatoes, besides numerous seedlings raised from seed this year.

Forty-five varieties of sweet corn.

Twenty-eight varieties of onions.

Thirty-two varieties of peas.

Seventeen varieties of beans.

Ten varieties of sugar beets.

Thirty varieties of Japanese vegetables.

The greenhouse and campus are now under the management of one of the most practical and best posted men in the county. His success in that department testifies to his skill and ability.

In conclusion permit me to say that this steady growth and advancement of the University has been, as I consider, the result of its well managed administration and devotion to its best interests. No effort has been spared, no opportunity lost on the part of its chief executive to make it what you see it to-day. I shall always hold in pleasant remembrance the honor this Society has conferred on me by so often electing me as its representative on the Board of Trustees.

The ten supplemental horticultural stations which have been established in various parts of the State, under the direction of Purdue University, have been in successful operation for the past three years. A special report in regard to their growth will be made to you by Professor Troop. I am also informed that a special bulletin upon the horticultural work of the year will be issued in a short time.

The work done by our professors at farmers' institutes has been, as you know, exceedingly valuable. The Board has appropriated \$300 per annum for the expenses of those attending such meetings, and it is expected that the work will be pushed with vigor in the future.

DISCUSSION.

J. C. Ratliff. We have received seeds from the Agricultural Department and from Japan; while with some the results have been good, others have been worthless. I would much rather Prof. Troop would speak of these results from the Japan seeds, as I know so little about these vegetables.

W. H. Ragan. I was going to refer in a pleasant way, that Prof. Troop sent me some packages of Japan seeds, with names in Japanese, from which he had been planting, and was not sure whether those sent him were peas or beans. We have at DePauw University a few Japanese students who are getting an education there. The thought occurred to me that I would refer it to them, I called on them and a little bright-eyed fellow seeing the seed pronounced them peas at once and that they were grown to feed to horses. They were small, black and delicate in appearance. I feel it my duty to say in regard to this report that I am much obliged to Mr. Ratliff for making the extended report that he has. You are aware that I succeed Mr. Ratliff as representative of this body, but have really had no connection with the institution officially since my term of service began, and do not feel competent to make a report. I feel that the society should also enjoy the same feeling toward Mr. Ratliff. In addition to his long service as representative of our organization, I very well remember when Mr. Ratliff was elected in 1875, he very kindly insisted that I should be elected to that position, but I felt that he was the proper person to represent this society and we have been honored by his service.

A. Glenn. In view of the efficient services of Mr. Ratliff during his connection with Purdue University I think we should tender him our thanks. I, therefore, move that a resolution of this kind be drafted and put in our report.

Referred to Committee on Resolutions.

W. H. Lawrence offered the following resolution, relative to the erection of a Horticultural Hall on the State Fair Grounds, which was adopted.

WHEREAS, It was stated in this meeting last year that Supt. Lockhart of the State Fair Board was in favor of erecting an Agricultural Hall in which fruit and flowers may be exhibited.

WHEREAS, The Indiana State Florists are heartily in favor of this movement and will be in session Wednesday night, therefore, be it

Resolved, that this subject be made a matter for discussion, Wednesday night, and that the Florists, as a body, be invited to be present.

Prof Troop, of the Committee on President's Address, submitted the following report which was approved.

Your committee recommend that the attention of the Society be called to the recommendation of the President, in regard to the organization of local societies.

We also recommend that more attention be paid to propagating new and valuable fruits.

We recommend that the holding of one or more summer meetings be held on invitation of local societies.

We also recommend the continuance of the plan of holding an afternoon and evening session during the State Fair.

We indorse the President's recommendation in regard to soliciting an appropriation from the Legislature, and we recommend that a committee consisting of Dr. Allen Furnas, Sylvester Johnson and I. D. G. Nelson, be appointed to take charge of this work.

We heartily indorse the recommendation as to the permanent fixtures and adornments for our rooms.

J. G. KINGSBURY,
J. TROOP,
J. K. HENBY,
Committee.

Dr. Furnas. In this matter of organizing societies there has been much good done. I am inclined to think it would be well to keep it up. In Monroe County they are starting out very promisingly. I am also flattered that they will do well at Greenfield. I hope this kind of work will go on. Let us have more local societies and fill up all these chairs, and have a live time when the time of our next annual meeting comes around.

The Finance Committee reported as follows:

Your Finance Committee desires to report that after a careful examination of the financial reports of the Secretary and Treasurer, we find them in good shape, and correct in every particular.

SYLVESTER JOHNSON,
WM. B. FLICK,
Committee.

December 4, 1888.

The committee to draft appropriate resolutions concerning the death of Major Z. S. Ragan and T. A. Lloyd, through its chairman, W. H. Ragan, submitted its report.

Pending its adoption Mr. Ragan said:

"The Indiana Horticultural Society was the first organization of the kind west of the Alleghany mountains. It was organized in 1840, mainly through the efforts of Henry Ward Beecher, Mr. Aldrich and a few others. It lived some five years and held some successful meetings and exhibitions, and then died out, owing to inconvenience in the way of travel. In 1860 this society was organized. Major Z. S. Ragan was in General Harrison's regiment before Atlanta, and severely wounded.

REPORT OF COMMITTEE ON OBITUARIES.

Mr. President and Members of the Indiana Horticultural Society:

In the interval since our last annual meeting, we have been afflicted by the hand of death. Major Z. S. Ragan, perhaps the last remaining charter member of the original Indiana Horticultural Society, organized in 1840, died at his late home in Southern California, on June 10, 1888. His death was doubtless the result of wounds received while in the line of duty, during the late civil war. From an early period in the history of horticulture in this State, down to 1869, when Major Ragan removed to Missouri, and afterward in that State, until failing health admonished him to try the congenial climate of California. He was ever found occupying a front rank among those of his chosen calling. Perhaps few, if any, individual exhibitor of Indiana, or even of Missouri fruits, was ever more successful in winning prizes, which is irrefutable evidence of his high merit as a fruit grower. Since leaving this State he has repeatedly visited our Society during its meetings, where he was always heartily welcomed, both by reason of his past relations and of his immediate ability to contribute to our interest and entertainment. In 1880 Major Ragan was present, as a leading exhibitor, at the great St. Louis fruit show, at which he participated in the organization of the Mississippi Valley, now the American Horticultural Society. In 1882 he was elected by the horticulturists of his adopted State (Missouri) President of their Horticultural Society. In 1884-5 he contributed to, and assisted in person, in making that grand display of the Missouri State Horticultural Society, at the World's Exposition at New Orleans. From the time he left our State, in 1869, until removed by death, Major Ragan was remembered and honored by this Society as one of its worthy honorary members.

In view of Major Ragan's long continued and valuable services as a citizen, as a patriot, and especially as a horticulturist, your committee would respectfully recommend the adoption of the following:

Resolved, That we most sincerely mourn the loss, by death, of our esteemed former citizen and honorary member of this society, Major Z. S. Ragan.

Resolved, That not only we as a society, but the cause of horticulture generally, sustains a great loss in the death of Major Ragan.

Resolved, That these resolutions and accompanying remarks of members, be spread of record, and that a certified copy be forwarded to Mrs. Ragan and the family, at Santa Ana, California.

Your committee would further refer, in sorrow, to the recent death, in this city, of Thomas A. Lloyd. At the time of the reorganization of this society, in

the autumn of 1860, Mr. Lloyd was a resident of Lafayette, and was the junior member of the firm of A. Lloyd & Son, then prominent nurserymen and florists in that city. As such this firm were then, and, indeed, had been for years leading exhibitors at our annual State Fairs. In this capacity Mr. Lloyd was then (in October, 1860), attending the State Fair in charge of one of the finest horticultural exhibits, including both fruits and floral displays, of that celebrated first State Fair held on the present grounds, in this city. It was during this fair, on Wednesday evening, October 18, 1860, that the reorganization of this society, which had occupied a period of innocuous desuetude from 1845, was effected. At this preliminary meeting Mr. Lloyd was called to serve as secretary, while the lamented Lewis Jones presided. Mr. Lloyd remained an active and useful member of the society for a number of years, during which the misfortunes of existing war bore most heavily upon the business of his chosen calling, which finally led him to seek more remunerative, though never more congenial occupation, in other fields, since which time his connection with the society nominally ceased, though he has ever remained the earnest friend and well-wisher thereof. To us the death of Mr. Lloyd comes as that of a friend and former associate; therefore, be it

Resolved, That through the death of Thos. A. Lloyd we are deeply afflicted.

Resolved, That these proceedings be made a part of our records, and that copies of the same be presented to the widow and surviving family of our former associate and respected friend.

W. H. RAGAN,
SYLVESTER JOHNSON,
DANIEL COX,

Committee.

J. G. Kingsbury read the following communication from T. T. Newby, of Carthage, Indiana:

SPRAYING FRUIT TREES.

Having had some experience in spraying apples and pears with Paris green the past season, I thought I would give it to the readers of the Indiana Farmer. The object in spraying is to destroy the larvæ of the codling moth, which deposits her eggs in the blossom end of the fruit very early, and when they hatch out they eat into the fruit and cause it to drop, or greatly injure it. A small particle of Paris green thrown there destroys them and saves the fruit. I procured a Howe force pump with fifteen feet of three-quarter inch rubber pipe and spray attachment. A ten foot pole was fastened near the end so as to elevate or change the spray as desired, and have it at a safe distance from the operator. The pump was fitted on a fifty-three gallon coal oil barrel, the supply pipe passing through the bung hole nearly to the opposite side of the barrel, the lower end being covered with fine wire gauge to keep out any small articles that might clog the sprayer. The whole apparatus was placed on a sled, and one horse could haul it and quickly pass around a tree as desired. Another hole was made not far from the bung, through which to fill the barrel and stir the mixture. I used one-half pound of Paris green to the barreelfull of water. I sprayed first, soon after the flowers were off, and again in about two weeks, and showered them well, till the leaves were wet. A man worked the pump and I attended to the spraying. We could throw it all

over trees thirty feet high, and some fifty trees, large and small, were gone over in about three hours, using two barrels of the mixture each time. Now for results: Apples this year are generally very fine. Mine are remarkably smooth and nice, and comparatively few wormy ones are to be found.

One red Astrachan tree, nearly twenty years old, that had often bloomed and set fruit abundantly, yet never had matured a hatfull, that were worth anything, being all knots and worms, this year bore eight or ten bushels, that were just as fine as could be. The limbs had to be propped to support the heavy load. Two old fall butter pear trees that had produced very little fruit of any value for years, just knots, cracks and worms, were loaded with fine pears this year, doubtless due to the two doses of Paris green. An old tree of the large sugar pear that had habitually shed its leaves early in the fall, often before the fruit was ripe, and so nearly ruining it, this year held its leaves the latest of any variety I have, even later than Kieffer, and the fruit was unusually good. Doubtless the two sprayings did the work. What confirms my belief is, that a tree of the same variety on an adjoining farm that got no Paris green, shed its leaves very early, as usual, and its fruit was poor.

One thing was noticeable on the apple trees. Some of them at the time of spraying appeared to have such a small amount of fruit that it seemed hardly worth while to bother with them; but the result was, the fruit did not drop prematurely so much as usual, and they actually had to be propped to prevent them from breaking down.

I think the first spraying was the most effectual, as one apple tree, a Lansingburg, was missed the first time, but was sprayed the last, and its fruit was much more faulty than those that got the first dose. Sometimes the Paris green was not as thoroughly mixed with the water as it should have been, it being inclined to settle to the bottom, and that would make that which was thrown out last, much stronger, even quite green, and so some parts of a few trees got too much of the poison, and there was no rain after the last spraying for some two weeks to wash it off. The result was some leaves were killed and fell off as well as a smaller quantity of fruit. I rather think a small quantity of Paris green would do the work and be safer; at any rate it should be kept thoroughly stirred.

A still time should be chosen to do the work, as a very little breeze may waft the spray right back on the operators or horse. Paris green is a deadly poison and should not be entrusted to careless hands, and yet it is said that stock may be pastured right along in the pasture without danger. I should think that after a good rain there would be no risk, considering the small amount used.

Taking the experiment altogether, I am pleased with the result, and would be glad to hear from others who may have done something in the same line.

DISCUSSION.

C. M. Hobbs. This subject will come up again this evening, in an address by Professor Webster, who has some facts to present on this topic.

Sylvester Johnson. I would like to inquire why it was that spraying kept the leaves from falling prematurely?

Dr. Furnas. We have this subject now before us, let us have it fully discussed. Perhaps Dr. Robinson can give us some practical ideas about this.

Dr. Robinson. It is claimed that spraying is beneficial, and large crops of fruit may be had every year. A friend of mine uses a cart with a barrel or tank on it, so regulated that as the team moves along the row one man works the pump and a second man manages the hose, going up one side of the row and then down on the other until the tree is well sprinkled, and they claim they destroy the codling moth and canker worm. If the quantity of Paris Green is too large it will kill the leaves. The quantity may be small enough to not damage the foliage and yet kill the insect.

Dr. Furnas. How about the spray staying on the leaves?

Dr. Robinson. It makes them dark green. I do not now remember the exact quantity used, but say $\frac{1}{4}$ pound to a forty-gallon barrel of water. It requires three men to properly apply the mixture, as it is necessary to have one man constantly stir the mixture. The poison is not dissolved but is held in suspension.

C. M. Hobbs. I would like to hear from Mr. Ohmer on this subject.

N. Ohmer, Dayton, Ohio. I have twice experimented with poisons to destroy the canker worm and codling moth. Two years ago we used it with good success, this year it was repeated, and I have never had more perfect fruit than I have had this year. I used London Purple, applied with a force-pump through a cyclone nozzle. It throws a very fine spray, and is applied in a similar way as the gentleman speaks of. I use a pound of London Purple to fifty gallons of water.

Dr. Furnas. How would that compare with Paris Green?

N. Ohmer. Paris green is stronger, and I am astonished to hear the gentleman say it will not hurt the foliage. I apply the poison when the trees are just going out of bloom, and again in two or three weeks afterwards. If I find any damage done by the poison I weaken the solution, say six ounces to fifty gallons of water; it should not be made too strong. Mr. Moody, of New York, who had thousands of trees and had much experience in this direction, uses one pound with two hundred gallons of water. London purple remains in suspension longer than Paris green, which will go to the bottom. There is no excuse for any man who has one or more trees to have wormy fruit. It won't, perhaps, kill all the insects, but it will a large portion of them. A large portion of my Baldwins, Smith Cider and Rome Beauty had not a blemish on them this year, yet at the great fruit show at Columbus there was much wormy fruit. People are slow to learn sometimes, but experience is a sure teacher. There are many good machines made for the purpose of spraying trees, and you can buy them all the way from \$5 to \$75. I have one for which I paid \$15, and it answers the purpose well. I have not tried spraying pears, but presume it will work as well as on apples. I have used it twice on apples, and shall continue to spray them in the future. It is a great thing, sir; it is a benefit; it will not only preserve the fruit from the codling moth, but will destroy anything that eats the leaf, and most all our insects that injure our fruit destroy the leaf. I do not know as it has any effect to retain foliage and cracking of the fruit. I doubt if the spray has anything to do with that.

Dr. Furnas. Bees are fond of extracting nectar from the apple bloom; would there not be danger of killing bees by the application of Paris Green or London Purple when trees are in bloom?

N. Ohmer. If you apply it too soon you will kill the bees. Apply it when going out of bloom; in about two weeks after that give another application.

Dr. Furnas. Is there any danger of getting the poison in the eyes?

F. Ohmer. My men were wet from head to foot. I believe if you have an abrasure of the skin it might do harm, but where a man is in good health and no sores exposed he might get wet and it won't hurt him. You must keep the mixture well stirred.

F. R. Holland, Hope. I would like to ask if any one can assign a satisfactory reason why some varieties of pears shed their foliage early while others do not. I have but few trees, and I notice the Beurre d'Anjou sheds its foliage early, while others just opposite do not. It seems to me the idea of spraying trees early in spring is not likely to retain the foliage in August and September. One particular variety is in the habit of shedding, while others are not. I have sprayed some this year with Paris green and I perceived that when there was a little too much thrown on the tree, the foliage was injured. I had one tree of Smith Cider, eight or ten years old, I notice the blossom end of the fruit had brown specks. I attribute this to the Paris green; it had the same effect on the fruit as it would have on the foliage. I can not believe, however, it can do anything to retain the foliage on the trees.

W. H. Ragan. We have a trouble among pears called pear blight. One of the forms of that disease affects the foliage of some varieties more than others, as the Beurre d'Anjou, Clairgeau and Flemish Beauty. It is probably a fungus growth. The apple foliage referred to in our discussion is what is called apple leaf rust. Scientists tell us that it is one form of a similar disease which affects the red cedar trees. It is perhaps in one stage of this disease that it will affect the apple foliage in another part of the year. After these balls throw out gelatine-like hairs or threads in the spring, when these spores become dry they are blown by the wind and settle on the apple leaves and certain varieties are able to resist them while others are not. Pryor's Red is one of the worst to succumb to that disease. Perhaps the best remedy is to discard the red cedar. As to spraying, no experimenter is entitled to cry "eureka," when he succeeds for the first time in this line. We have had fine fruit this year, and had no spraying. If we had sprayed we might have attributed our success to that. I think we should proceed cautiously with this business. In California instead of spraying they fumigate; they draw a canopy or tent over the tree and fumigate with sulphur, which process we scarcely know or think of here. They have very stringent sanitary laws in that State; for instance, if you send a barrel of apples to that market, if they were to find a codling moth in them they would be condemned; so they are very careful to fight these particular pests in different ways. I understand that London purple and Paris green are the same in effect. The danger is the over-use of these preparations. It is best to apply the mixture when the young fruit is still standing up, with the calyx open, so it may be carried in where the codling moth must enter. The codling moth deposits its egg there, and the eye must get the poison. If the

fruit hangs down as in the pear and apple after attaining some size, you get but little benefit. The first brood of worms is the worst and it should be applied immediately after the trees bloom and for a couple of weeks afterwards.

C. M. Hobbs. As regards the foliage there is a marked difference in the cellular tissue or structure of the foliage in different varieties of trees and plants, for that reason some foliage is healthy and some not. Some will stand our hot sun and dry atmosphere without injury, while others will not. Some will succumb to the attacks of blight and fungus, while others will not. I attribute the falling of the foliage to the inherent weakness of the foliage, or susceptibility to disease. It is noticeable in the Beurre d' Anjou and Flemish Beauty pears, and some varieties of cherries.

Mr. J. A. Burton, Mitchell. In our section of country some varieties of apples are subject to blight. There is something on the skin which causes them to scab; this is especially the case with the Smith Cider. On the side on which this scab will be most abundant the apple is less developed. It has the appearance of rotten specks, but on closer examination I find it is not. I would like to ask Mr. Ohmer if these varieties are free from scab if sprayed with London Purple?

N. Ohmer, Ohio. I am not troubled in that way at all. My Smith Cider are as smooth as other varieties. My Rome Beauties are well colored and beautiful, where, as grown in Southern Ohio they are covered with rust, though larger than mine. I saw them coming to market, but they were not nice. I have none of this on any of my apples.

Dr. Furnas. Did you ever see it on the White Winter Pearmain?

Mr. Ohmer. I did not. In regard to leaves dropping, it is true, Mr. President, that the leaves of the pear drop earlier from some varieties than others. The Tyson is the first to lose its leaves, yet, this year they held on longer than usual. The Beurre d' Anjou drops early, so does the Flemish Beauty. The Lawrence holds on longer; it is the best pear I grow, and brings the most money. On the foliage of trees that drop their leaves prematurely little spots will appear similar to those on the foliage of the strawberry, which shows that it is diseased. They grow yellow and down they go. I do not think that spraying is going to help it any.

J. G. Kingsbury. How do you explain the fact that this man speaks of here, that in spraying his trees he had fine fruit, and across the fence in his neighbor's orchard where the trees were not sprayed the leaves fell off, and the fruit was scabby?

Mr. Ohmer. I do not think that spraying in May would affect the leaves in August.

J. G. Kingsbury. It is my opinion that it is bacteria, the same thing that produces blight. Some varieties blight more readily than others. Bacteria works on trees, the leaves of which are tender. It may be that Paris Green or London Purple is an antidote for it. It is well to make an attempt to discover these things even if we fail.

Daniel Cox, Hendricks County. I have a number of Flemish Beauty pear trees running north and south over a level ridge, and down on to low ground. The trees on the ridge shed their leaves a month earlier than those on the low ground. I believe the cause to be some form of fungus growth.

Secretary Hobbs. It looks like moisture or nutrition might have something to do with it in this case.

Dr. Robinson, Greencastle. Vegetable Physiology says that there is a shedding of leaves going on naturally. If you will run your mind over the different seasons you will notice these facts. In a drouth certain mineral elements are withheld because of the drouth, and the leaves shed in consequence. They shed worse in a dry season. It affects some varieties more than others. I am satisfied it is the withholding of mineral elements. Some shed early, but when we have a long moist fall they will sometimes put out again and bloom and form fruit. Mr. Ohmer, in speaking of spraying his trees, said his men got quite wet while applying the London purple. There is not much danger in wetting the outside, but you had best keep the mouth closed. The poisoning principle of London purple and Paris green is arsenic.

N. Ohmer. I had twenty-two trees drop their leaves early for the last fifteen years, wet or dry, and this year the foliage remained on some weeks longer. Wet weather has but little to do in causing trees to drop or retain their foliage.

S. Johnson. It has been suggested that in the vicinity of gas wells, where left burning at night, the fruit has been better than at other places. To account for that fact those who live near the wells say the ground is covered with insect enemies of fruit, which are attracted by the light at night.

Mr. Henby, Greenfield. I have noticed that in the vicinity of gas wells the ground is usually almost covered with insects, having been destroyed by the fire from the wells. While these may be an advantage in destroying insects, I have also noticed a great many little birds destroyed by coming in contact with the heat.

The Society adjourned until 7 o'clock P. M.

TUESDAY EVENING SESSION.

The Society met at 7 P. M., President Furnas in the chair.

DISCUSSION.

A. Glenn. It was not brought out in our discussions this afternoon that a great many of our hardy varieties shed their leaves early. They are not necessarily injured because of shedding their leaves early. Many of our hardy kinds shed their leaves first.

Dr. Furnas. In the use of Paris green on potatoes I would ask whether there is danger of absorption into the potato? Dr. Robinson is well posted on this question and can give us some practical information regarding it. There is a constant throwing off from the system through the pores of the skin. While we are inhaling poisonous fumes through the lungs, we are throwing off all the time through the skin. For this reason those boys of which Mr. Ohmer speaks were protected from any serious results.

Dr. Robinson. We have reports, sir, of death caused by eating potatoes treated to Paris green. The leaves elaborate the juice forming the potatoes, hence the result. The leaves perform the same office as the lungs in animals which take in

oxygen and throw off carbonic acid, while the leaves take in carbonic acid and give off oxygen. There was a question sprung this afternoon relative to the cracking of pears. There are but two articles of diet in the catalogue that nourishes all the tissues of the animal body, which are milk and eggs, and all the balance supply some particular part. Suppose an animal should be fed on a diet that failed to furnish all the tissue with nourishment, what is the result? Now, when we come to the pear tree we all confess that chemistry has done much for agriculture. It has made it equally clear that all the elements of nutrition must be supplied. The apple tree requires certain elements in the soil to make it healthy and thrifty; the proper proportions of lime, potash, phosphates, etc. Suppose you plant a pear tree and the soil is deficient in this necessary food for the tree, what is the result? Can it be a healthy and thrifty tree? I answer that it can not be. In order to have a healthy tree it must have that kind of nourishment it prefers from the soil, and have plenty of it; it will use no more than it wants. When your trees can have these essential elements they will be most likely to bear, and the longevity of your trees will be better. Trees that are not in the habit of bearing if you will throw ashes around them they will bear, and no mistake about it. The lye drained from the ashes is nothing but potash dissolved in water, which is beneficial to the trees. This is an interesting subject; you may go over the entire field and if you will furnish the proper food the tree will prosper. If it lacks these essential elements there will be lack of vigor in the tree, cracking of fruit, and shedding of leaves.

Dr. Furnas. I have a White Doyenne pear tree that was not in the habit of bearing. Dr. Hull, one of the best informed men I ever saw, told me if I would cut around that tree, cutting off the roots by a certain rule he would indicate, he would guarantee a crop of sound fruit. I did that, cutting all around, taking off one-fourth or more of the roots, and the next year we had as good fruit as I ever saw, and that tree still bears fine fruit.

Dr. Robinson. A tree may fail to bear because its growth is rank, but when you cripple that growth it will set it to bearing. Some have recommended belting. Anything that will retard the wood manufacturing process will reach the point.

Dr. Furnas. Some years ago I took out three-fourths of an inch of bark on a Rambo tree, and the result was I had good apples.

Dr. Robinson. The circulation goes on through the wood and can not return. It will greatly increase the size of fruit, whereas if there were no belting done you perhaps would not have had any better fruit than others.

F. Ohmer. The White Doyenne has cracked some with me up to three or four years ago. Since then I have done nothing and had big crops. I neither cut nor dig.

Professor Webster, of Purdue University, entertained the Society with the following address on—

ENTOMOLOGY.

I do not know as I have much to offer, the greater part of my time the past month or so has been so closely occupied that I have been unable to prepare a paper for this occasion, and therefore what little I may say will be verbal. During

my discourse I wish to speak briefly concerning the codling moth and curculio. As you probably know applications of these arsenic mixtures are used to destroy insects that are hurtful to our fruit. It sometimes occurs in one part of the State where they would apply these mixtures, and would not experience any damage to the foliage called burning, in another part of the State they would apply the mixture, apparently of the same strength, with injury. Now, of course, there are reasons for this. We find where we can apply Paris green or London purple, say one pound to fifty gallons of water; we find an application of that strength will not do in the south where there are heavy dews, it will burn the foliage. Sometimes after an application there will be a slight burning of the foliage, but the effect will be slight until it rains, when it will apparently take hold and do additional damage. These are things which puzzle us, and are a good evidence that we have not got to the bottom of the subject. You know it is as I have been demonstrating that white arsenic will burn the foliage perhaps worse than Paris green or London purple. In the Kerosene emulsion we render the arsenic soluble. You know the surface of the leaf is full of little holes or stomata; this soluble mixture gets into these stomata, permeating the air spaces between the cells. In using Paris green or London purple, it should be applied on dry warm days, instead of damp weather. These little stomata during wet weather are kept open, and during dry weather are closed. Hence in wet weather the little particles of poison are carried down through the pores in the leaf by the water, producing this damaging result to the foliage. In fighting the codling moth we spray the foliage in reaching the calyx of the apple. When the moth deposits her egg we want to spray sufficiently to get in the calyx, so the larva of the codling moth may get the poison and be destroyed. While we may use the same remedy for the plum curculio, we want to strike the enemy in a different way. With the codling moth we have to fight an insect which is more difficult than the curculio. The curculio does not deposit an egg in any particular place on the fruit, and so you have to really cover the entire plum if you poison her in the act of depositing the egg, and it is probable that she may come to her death in feeding on the poisoned foliage. While the moth does not desire the foliage, the curculio does. Whereas if you poison the foliage of the plum tree you have a better opportunity to destroy the curculio than the codling moth. The great difficulty is that people have applied remedies and got certain results, while under other circumstance the result might have been different. Mr. Hoffman told me that he sprayed and got good plums, while some of his neighbors did not spray and got good plums also. Mr. Beard, of New Albany, also reports good plums after spraying his trees. Mr. Latta, of Haw Patch, began this spraying business with poisons this spring, and applied them faithfully, and is utterly disgusted, which I was surprised to learn. So there is a great deal to do in that direction which we can not do at the experimental station. We have not trees enough, besides they are too small. You can do this better than we can there.

It is doubtful whether the codling moth can be eradicated, but it can be measurably kept down by inducing other people to spray their trees as well as yourself. We would not have anything to fear if we could get all our neighbors to do

this. One man may spray his trees and destroy the codling moth, but his neighbors who do not spray may send in a second brood; so you see he is at their mercy. It is quite noticeable that many old orchards hardly ever produce anything, the trees are left standing, neither sprayed or cut down, and from them insects are scattered all over the country. If you can keep up this enthusiasm which you have had for a few months in applying this remedy, and induce your neighbors to cut down their old trees, I believe that 90 per cent. of your fruit would be free from the codling moth. As to curculio, I will touch it lightly. All I have reared at our experimental station from plums, apples or Siberian crabs, have been produced in August. Wherever the fruit was decayed, in two weeks all were dead; where the fruit was green, the curculio was alive. Now you can judge whether they eat the fruit or not; the inference is they do. We must fight them when the buds appear in the spring.

W. F. Leitsman, Hendricks County. I invested about seven dollars in March last in a little force pump manufactured in this city and commenced using a solution of Paris green about the time the blossoms were off the trees. I made my solution at the rate of one-half pound of Paris green, to one hundred gallons of water, and sprayed freely. I sprayed the trees until the water would drip from the leaves. I had a piece of gas pipe two feet long, took a five-gallon cask and carried it around the trees and sprayed them from all points as much as possible. It is necessary to keep the liquid agitated. When I would cease stirring, it would settle to the bottom. The result this year has been an exceptional one. We have had nicer fruit where nothing was used, than for many years before. I have an old orchard, and these old trees are breeding these pests and we must fight against them. Some of my neighbors don't use anything, and they raise codling moth, curculio and everything else. I have never succeeded in raising a perfect specimen of any kind of apple until this year and I have resided on that place nine years. I have a Gilpin tree that has set much fruit each year, but before gathering time came they would drop off; I do not think you could find a perfect apple. This year, after spraying my trees twice, just as the bloom fell and then in two weeks again, at gathering time I do not think you could scarcely find a wormy apple. My neighbor's orchard is about eighty rods east of mine; parties were gathering apples about the time we were gathering ours; he has as many bearing trees as I have, and young trees just in their prime. They gathered but very few perfect apples, and when they were done they picked up twice as many wormy apples as we did, not fit to put up at all or for cider. All their apples were wormy. The only way I can account for it is, he did not spray his trees with anything. I do not know much about this, but, judging from what I have seen, I am impressed that it is the only thing for us to successfully fight this pest with. We need a united effort on the part of the farmers and fruit-growers to accomplish any great results. It is no use for me to fight against it and all my neighbors breeding them. My Ben Davis trees bore this year for the first, except a few scattering specimens. They have been planted eight years, and we gathered three bushels per tree from them this year. The apples which set on the trees last spring were enough for three or four trees. I thinned them three times and yet the limbs were so loaded down that some of them broke. When I gathered them this fall I found but few specimens

that showed any sign of codling moth. The probability is, if I had not used this mixture on my trees I would not have been in any better shape than my neighbors. We probably can save three-fourths of our fruit by spraying with Paris green.

Mr. Holland, Bartholomew County. If the larvæ of the codling moth feeds only on the apple, the codling moth was destroyed for want of food last year. The first brood this year must have been very small. It remains to be seen whether we have them next year if we spray as this year. There is an instance which comes to my mind just now. In the year 1875 the tent caterpillar became very destructive in orchards in Southern Illinois. In the following spring, after these caterpillars hatched and formed colonies on the branches of the trees, there came a frost, the thermometer fell below twenty degrees and ice formed on water. Some potatoes planted were froze down to the tuber. The result of that freeze was the caterpillar was destroyed for that year. Such facts as these ought not to be lost sight of. Spraying is no doubt beneficial, but, as the gentleman says, one man can not destroy all the codling moths for his neighbors. We need to study these facts. I feel, for my own part, that all of us are liable to make mistakes and come to hasty conclusions in matters of this kind.

N. Ohmer, Dayton, Ohio. If those gentlemen persist in using a spraying machine and spray with Paris Green or London Purple, and have apples as the result, it is only a question of time until their neighbors will do the same.

Professor Webster. I would use one pound of Paris Green to 100 gallons of water, two pounds to 200 gallons.

Dr. A. Furnas, Hendricks County. I have had nicer apples this year than I have had for many years past. My Famuse are exceptionally nice. If I had put a liberal supply of lime under my trees I have no doubt I would have as nice apples as they have in Michigan. Let us take in all the situation required for success in fruit raising. You go into the laboratory of the chemist and you find it is a constant study in experimental work. I am carrying on a 160-acre laboratory every summer. There are a great many interesting experiments going on on our farms greater than they can produce at Purdue. Farmers need to think and study these matters to produce favorable results. In forming tree tops we have to bring in science. We must know how fiber is made and when and how to prune, that they breathe through the leaves as air through the lungs. When we understand the nature of this thing and follow in that line it is easy enough to know how trees are made.

W. A. Workman read the following paper on—

CARE OF A YOUNG ORCHARD.

If you alone were to hear me I would hesitate to say a word. But I expect to reach a much larger audience through our published reports, and trust I may be able to say something to simplify as much as may be the growing of a young orchard. My observation has been that when instruction is given on any subject it is wise to hit the essential points hard and avoid too many words that mean little or nothing, and only tend to confuse or discourage the learner.

To know what not to do, too, is as important as what to do. Among the what nots: Don't plant in the mud, but wait until the ground is in good condition; avoid putting manure or anything in the hole before setting the tree. The first thought of many seems to be to get plenty of manure under them, which is bad for at least two reasons: First, it causes many to die by the unnatural heat and drying effect; second, if they do survive the first season the growth is apt to be too strong and rapid, thus rendering it liable to winter kill. Again, avoid getting trees of distant nurseries when the same or better ones can be had near by. The reason for the latter is too apparent to need any comment. Avoid the too common mistake of sowing your orchard in small grain, or worse still, in grass. The reason of this is that your trees get little or no cultivation at all at the very time in their lives when they need it most. Last but not least avoid pasturing a young orchard with any kind of stock; make a rule as an Illinois friend did. He built a high fence around his orchard and then made a strict rule that nothing was to go in there that wore hoofs.

How and when to plant are the first things we wish to consider under the head of what to do. The old rule that "what is worth doing at all is worth doing well" applies with peculiar fitness to tree planting, since we don't plant for a day or a year, but an orchard is a thing of a lifetime and should be planted with this thought in view. The time for planting, that is spring or fall, is, I think, of less importance than the manner in which it is done. My preference in this latitude is for fall planting, for reasons which I might give, but since the time is not essential to success we will leave that out.

The distance between the trees should vary with different kinds of fruits. For an apple orchard I like the trees thirty-two feet apart each way.

Dig the holes large and deep enough to allow the roots to occupy their natural position without cramping or twisting around; I consider it far better to shorten the roots a little than to cramp or twist them about to suit the hole. In some trees you will find the roots coming out in two or more layers like the limbs come out on pine trees. In such cases it is very important to see that the fine mellow soil is well packed between these layers. When the hole is carefully filled press down firmly with the foot; but better still in most cases is to settle the soil with water, particularly so when there are a great many fibrous roots. Evergreens should always be planted by using water.

Now the planting done don't rest quite easy until the bodies of the young trees are tied up with corn stalks, which should be allowed to stay on during winter and summer for several years. In winter they protect from the depredations of the rabbits and in summer they shield from the blistering effect of the sun, besides turning off harmlessly many a severe knock from the singletree.

In addition to tying up the bodies, it is well to raise a small mound of earth against the stalks around each tree, not only the first winter, but for two or three winters. Trees are commonly planted a little deeper than they grow in the nursery.

Now many take as much care or more than I have indicated in planting, and still fail because of the lack of proper after-care. Cultivate constantly in some plowed or hoed crop, until trees are in bearing, when you want to still continue to

cultivate and manure besides. Most soils in this State will grow trees fast enough for health and longevity until they come into bearing without any fertilizers. But reason and experience both teach that when a tree is loaded with fruit it requires a little extra feeding.

Many, very many orchards are bearing poor stunted apples, and dying by inches, because of starvation. I find it is a very common practice in some localities for the orchard to be made a calf or sheep pasture, and often when winter comes the grass is eaten down to the very roots. Still, otherwise intelligent, farmers wonder why their orchards don't grow big fine apples as they did in other years.

I find I have skipped one part of orchard care which in other years was considered of the very first importance, namely, pruning. I don't consider pruning of first importance, neither do I ignore it. But I believe it better be ignored entirely than be done as some do. For the first four or five years young trees should be pruned a little to put them in proper shape, to remove limbs that cross, to discourage forked trees and encourage a center from which the limbs would radiate. Now, to recapitulate, plant very carefully in mellow soil, cultivate constantly until in bearing, then continue the cultivation with some fertilizers added; trim trees so there will be no forks to split; sow no small grain or grass in the orchard, nor pasture the life out of it.

If you have ground ordinarily good for an orchard, and follow these simple directions only tolerably well, you can grow fruit even in Indiana. And if you want to do more, no objection to rubbing off the rough bark, washing the bodies in weak lye or whitewashing occasionally.

DISCUSSION.

S. Johnson, Irvington. This paper is full of valuable information. There is one suggestion I wish to make, which is this, instead of planting in the mud of spring, let us plant in the fall.

Mr. Burton, Lawrence County. In regard to cultivating orchards, we do not do that all the time. I have trees planted in blue grass sod, but these trees were mulched with straw; in fact we built pens around them with waste rails and mulched inside of that. The growth has been so great this summer I have been thinking whether it would be profitable to keep that mulching up or not. A friend of mine, also an apple grower, mulches his trees in preference to cultivating, and recently shipped a car load of apples to Greencastle, and friend Ragan told me that they were as fine apples as he ever saw in his life.

Mr. Harter, Winchester. Fall planting has been a failure with me. I much prefer the spring.

Dr. Furnas. I set 219 Ben Davis trees in the fall and they all grew.

A. Glenn, Bartholomew County. This question of tree planting is an interesting matter. I am decidedly in favor of cultivating our young orchards by planting in corn. I find that trees not cultivated are troubled more or less by the borer. A sun scald is the starting point for the borer. I have examined many trees and I have found the borer enter on the southwest side of the tree. If you plant an orchard in the fall or spring you should cultivate in corn; the growing corn will

protect the trees from the sun during the hottest part of the season when it is most needed. If the ground is sown to wheat or oats it grows up rapidly in the spring shading the tree when shade is not needed, and not shading when needed, and checking its growth. I never knew a man who sowed wheat or oats but failed to a great extent, and always succeeded with corn. After the trees become older the limbs will furnish protection. The corn prevents the wind from swaying and injuring the trees, and in the winter holds the snow.

N. Ohmer, Dayton, Ohio. That has been my practice. I invariably cultivate my trees until they come in bearing, say four or five years, then set in clover and let them go for a time. I plant thirty feet apart, but I think it is too close. My Baldwins lock together in the branches and die. Trees of this kind should be planted forty feet apart, and, in fact, all trees that are inclined to spread out.

Dr. Furnas. The flat head borer never attacks a healthy tree, but the round head borer does.

W. H. Ragan. As to the matter of pruning I have changed my notion considerably. Pruning should be first for discipline, and second the removal of dying or dead branches; beyond that we should not prune.

J. C. Stevens, Wayne County. When my old friend, John Conoly, at Center-ville, had an old Roxbury Russett tree from which he could not get any apples for ten or twelve years, he finally gave it a heavy coat of manure, and the next season, and until that property changed hands, it never failed to raise good fruit. Another friend in my neighborhood had some one hundred and fifty to two hundred trees; these were utterly neglected; that property changed hands to William Bilks; he went in and tore out the old trees and hauled manure from the street car stables, and scattering it all over the ground, plowed it in the spring and sowed in oats. We held a fair in the Grand Opera House, and he produced as fine apples as I ever saw in the United States, and no others in the county. I have been interested in that orchard ever since, and he never fails to pick a large amount of fine fruit every year. He made a fine exhibition when we believed we did not have five bushels of apples in the county.

J. C. Ratliff, Richmond, Wayne County. I will bear Jesse Stevens' statement out. It has borne as fine apples as you can find any where. As another illustration, I will refer to Thomas Morris, near Richmond, who took an old broken down orchard, and after working it over it seemed to take on a new lease of life, and had good fruit while we had but little. His system was to cultivate the rows as it were corn, breaking up the ground around the trees to the body, and manure, which seemed to revive the old trees to make them bear profitable crops of fruit.

A. Glenn. How old was the orchard when he put the manure on?

J. C. Stevens. Twenty years old.

A. Glenn. Old trees don't need protection, but young trees do, something like a corn crop.

Secretary Hobbs. The bodies of young trees may be protected by wrapping with straw, paper, corn stalks, etc., and for larger trees two boards may be nailed together at the edges, sharpened and driven in the ground on the southwest side of the tree.

A. Glenn. We should have some protection to the body for three or four years. Prof. Budd said a few years ago, in the northern part of the State, to plant hardy varieties, such as the Duchess of Oldenburg and Wealthy. Under the microscope they showed a different cell structure which made them hardy. Therefore the freezing and thawing does not affect them as our more sappy kinds. Some of those varieties succeed in the North, but we can raise the Ben Davis most anywhere and give protection. As to manure, you can't raise good crops without fertilizing.

Peter Rabb, Marion County. Our trees need protection. I have noticed where our trees are damaged in the winter it is on the the southwest side.

C. M. Hobbs. Protecting the bodies of young trees is important, and to manure when the trees comes into bearing. It must have something to feed on. If it has exhausted the soil in making a wood growth, it must have added resources to draw upon for perfecting fruit. In the Southern portion of the State, on the hills, I have seen orchards literally starved to death.

Wade Merrill, of Maine. I have been much interested in this discussion of planting apple trees, and have been quite an observer of the growth of young trees, and I have noticed that a great portion of the trees set have died. Aside from the borer I have come to the conclusion that the sun has killed more trees than anything else. I have always noticed that when a young apple tree leans from the southwest it almost invariably dies, and I suppose the damage is done in the summer, yet some maintain that the injury is done in the winter. Let that be as it may, the fact is they die, and now for a remedy. I find that when a tree set and grows up right, if the largest limbs come out on the southwest side, that tree is invariably a good one. In setting my trees of late, I have the largest limbs come from the southwest side. These trees have not been growing long enough to test whether it will have this effect on them or not. In the State of Maine the borer is a great terror. A friend of mine said if it were not for the borer he could raise apples at 12½ cents per bushel. Young trees need protection. If you give protection by artificial means the limbs on the southwest side are not perhaps so necessary, but when you neglect this it is essential to have limbs come out on that side. It don't take any longer for limbs to grow on that side than on the northeast side. If this rule were followed out by tree planters they will save a large portion of their trees.

Dr. Robinson, Putnam County. In planting an orchard it is a good plan to plant the tree leaning considerably to the southwest; it will be straight by the time it is of sufficient age to bear. If the tree leans to the northeast you will find by sawing through the bark that little growth will be found on the southwest side, but the chief growth is on the northeast. The bark is thin on the southwest and the borer is liable to go to work there. My experience is that the borer often attacks trees when there is a drouth and the tree can not grow, and will attack all sides of the tree, when perhaps under different circumstances they would not. I do not cultivate any crop among my trees. It is on virgin soil, but I plow a strip about three feet wide on each side of my trees. There is no use of destroying the fertility of the soil while intended for apples. Our summers don't hurt apple trees if they stand erect. Dr. Moudy has a Ben Davis orchard which is a great source of income

to him. He told me if I wanted a good orchard to plant largely of the Ben Davis. Most of his orchard is of that kind, and last year he had three thousand dollars' worth of apples, while we had none. He cultivates that orchard, but lets the plow run light when near the trees. He sold that orchard the past season and went to work and planted a new one of Ben Davis. As to the planting season, you will find if you plant a tree in the fall when the ground is dry you are liable to lose many trees. The ground should be moist. The feeders are cut off, and when the ground is in that condition you should pour in water; but when the ground is damp there is no trouble. Generally speaking, stone fruits do better planted in the spring, yet I plant them successfully any time.

Dr. Furnas. When I plant in the fall I raise a mound to keep away the mice. It also serves to keep away the atmosphere from the roots, so they will thaw out slowly, which is an advantage.

Mr. Richie, Morgan County. For five years I have had to mulch my young trees. I keep my young trees tied with newspapers and let them remain there until the weather wears them off.

Dr. Furnas. I am suspicious that much of this killing of trees is done in the winter.

J. C. Stevens, Wayne County. I planted out several Tyson pear trees, Flemish Beauty and Clapp's Favorite. Some of them I put a board on the southwest side, and those are bearing, while those we did not protect in this way are dead. I think it is done in August. Some are in favor of mulching while others are not. Prof. Budd, after returning from Russia, sent me about 125 trees. I find some of these trees bloom too soon in this climate. They would be in bloom before others commenced swelling the bud. I waited until the ground was frozen and then mulched them with corn stalks to keep them from thawing out too soon, but the mice would interfere—they are always on hand. Mulching would not do in our country. Trees require some protection from atmospheric changes.

Daniel Cox, Hendricks County. A great many trees are killed both in summer and winter. If you set small trees they are not liable to be killed in the summer, but if large and too many roots cut off, the sun will kill them.

Mr. Henby. My judgment is that it is generally done in the winter. I notice that sap freezing in the tree expands, and thawing contracts; that on the southwest side, where the sun has a strong impression, thaws out and contracts and consequently bursts the bark.

S. Johnson. Let us compromise this matter by protecting the bodies of our trees both winter and summer.

W. F. Leitzman, Hendricks County. Wire cloth, such as is used for door screens, cut in strips from four to six inches wide, bent around the body of the tree and shoved in the ground a little way and tied with a string, makes a good protection against mice and rabbits, and is a protection against the sun. It is easier and more quickly applied than corn stalks. This wire screen can be bought for two cents a yard and cut with shears.

Sylvester Johnson made the following report of the meeting of the American Horticultural Society, held in California in February last:

On the 12th day of last January, about one thousand persons, mostly from the Northern and Northwestern States, representing the various conditions of society of these regions met in Kansas City, at the invitation of the officers of the American Horticultural Society, to join in an excursion to visit the regions beyond the Rockies and Sierras, and to attend the bi-ennial meeting of their society, which was to be held in one section each, at San Jose and Riverside. But few of these had ever visited the Golden Shore, and being without that information that comes from actual observation, and having read and heard so much of the great novelties, beauties and attractions of that region as they had been so forcibly depicted by paid correspondents and real estate agents, it was very natural that expectation ran high, and that anticipations of great pleasure were numerous. Be that as it may, after great confusion in running to and fro to get baggage checked, and to find the Pullman, whose name corresponded with that of our tickets, that vast company found itself snugly ensconced individually in his or her berths, and late in the afternoon, in twenty-five Pullmans, drawn in four sections, by as many engines, glided smoothly over the Missouri Pacific to the South, leaving behind one of the worst snow storms of the season. Next morning we found the snow storm to be a thing of the past, and the sun, a beautifully clear sky from above, a fertile soil below, and Choctaw and Creek Indians of the Indian Territory greeted us from around. About 1 o'clock P. M., of the 13th, we reached Dennison, Texas, where arrangements had been made for our reception and entertainment. We had frequently heard of the proverbial hospitality of Southern people, but never before had we experienced so thorough a realization of it. The banquet was such as to make us regret that we had brought our lunch baskets with us. Not only were the esculents all, and even more than could be desired, but the exquisite taste exhibited in their arrangement as well as the decorations on and surrounding the tables, the new, to us, and beautiful flowers, all added to the pleasures of the occasion. Besides this there was an air of refinement, intelligence and sociability possessed by the citizens of this place not often equaled and never excelled by citizens in more northern localities. Much of the success of this reception was, no doubt, due to the indefatigable energy and enterprise of Mr. T. V. Munson, Senior Vice President of the A. H. S., who resides here. The next point of interest reached was Fort Worth, where a reception and entertainment were planned, but on account of rain and delayed trains, were abandoned. Here we struck the Texas Pacific R. R., and turned our faces to the "far West." In this short paper I shall travel fast, therefore, I shall jump over several hundred miles of interesting space, and land at El Paso, Texas. This place is supposed to contain about ten thousand persons, and is a comparatively new, thrifty and growing town. Being delayed here, many of us boarded the street cars, and, crossing the Rio Grande on the only trans-continental street car line in the world, found ourselves in old Mexico. Some of us who had never before stepped foot on foreign land, and who found ourselves so soon after leaving civilization and refinement surrounded by those who speak only the Spanish language, living in those unique adobe houses, with openings for doors, but no shutters and no windows, felt a little nervous, and

almost involuntarily putting our hands on our money, if we had any. This impulse was not without cause, for the writer of this had stolen from his overcoat pocket a pair of gloves that were much valued on account of the fact that they were found in his stocking on Christmas morning.

For the history of other incidents that transpired on the day of our visit to Paso Del Norte you are respectfully referred to page 247, of Prof. Ridpath's "Beyond the Sierras," found in Vol. of Proceedings of Am. Hort. Society.

Leaving El Paso on the Southern Pacific, we wend our way through the Colorado Desert, very similar however to much of the region passed in Arizona and New Mexico. Crossing the Colorado river at Yuma, we enter California, but instead of the luscious fruits, the fine flowers, the beautiful trees and many other attractions we were promised on our arrival in California, we were doomed to disappointment, and to a long and tedious ride through the same monotonous, dreary, sandy plains we had become so used to. There was one fact however that relieved the monotony, and that was that instead traveling as is usual so many feet *above* the level of the sea we were told we were traveling through a depression *below* this level; in one place as much as 300 feet. It was at this point we stopped at the little town of Idio, where we were met by a committee from Riverside, who had brought with it a car-load of the greatest variety and the most delicious fruits ever seen by most of the excursionists. These were tastefully arranged in baskets, one of which each member of our society received. The members were recognized by a beautiful red badge worn by each. After returning to their sleepers the members were at once surrounded by admiring friends, who were not members, and many urgent calls were made for the loan of badges. The gentlemen responded promptly, especially if the request for a badge came from a lady. The committee claimed that these fruits were all grown in the vicinity of Riverside, only sixty miles away. This gave us hope that our pleasantest anticipations were soon to be realized. But it was not until we reached the villages of Ontario and Pomona that the realization of the possibilities of California break upon us with all its force. After leaving Colton and before reaching Ontario, a gentleman who sat near us said: "Well, if this is California, I don't want any of it." But on nearing the town the surroundings were sufficiently attractive to cause him to step out on the platform to get a better view of them. The sight of long rows of fine healthy orange trees loaded with their golden fruit—the fertile soil, the well cultivated vineyards, the miles of carriage ways lined on each side with the Lombardy poplar and other beautiful trees, completely drove away from him all feeling of disappointment, and he came rushing into the car, and with both hands raised, ejaculated: "I never saw anything like it, just come out here and see it." On reaching the town of Pomona a few miles distant, our friend was the first to step off the car on the station platform, and rushing up to a man standing near said: "What is the price of land around here?" When told that good orange land can be bought within a few miles of this place at from \$1,500 to \$2,000 per acre, his enthusiasm somewhat abated. The next place reached was the city of Los Angeles (Lost Angels). We concluded that if there ever had been any angels there they were most assuredly lost. Certainly the being who at that place charged a man

twenty-five cents for a cup of hot water for his sick wife at best was not a *ministering* angel. The newspaper and verbal reports we had read and heard of this famous city had evidently raised our expectations too high. In short we were very much disappointed in Los Angeles. We were not surprised to find so much mud when we learned that the demand was so great that 160 feet square of it sold, while we were there, for \$350,000. Since then we have learned that the bottom has dropped out, and it is mud all the way down. The next place reached was Santa Anna, about forty miles south of Los Angeles. This is a growing town situated in a very fertile valley of the same name, which produces in addition to the cereals, most of the semi-tropical and some of the tropical fruits, of excellent quality and in great abundance. Here, as elsewhere, the citizens treated us very kindly, taking us in their carriages through the surrounding country and showing the many beauties and wonders thereof. In the village of Tustin, three miles from Santa Anna, noticing a pile of pumpkins covering about two acres, we asked our driver why they were thrown out there instead of being placed under shelter? He answered, "They grew just where they lay, and we do not need to place them under shelter, for we have no winter here." Said we: "You seem to turn your attention mostly to raising fruit, where do you get feed for your stock?" "We feed on alfalfa altogether." How much stock do you keep? "Two horses and one cow. And how much alfalfa does it take to feed these?" "That which grows on one-half an acre." Is it possible you keep two horses and one cow in good condition on the product of one-half an acre? "You see the condition they are in, and they do not get a straw nor a grain except that grown on the half acre." By this time our incredulity had fled, and we were ready to believe anything a Californian would tell us, always excepting when he would tell us the distance to certain mountains was twenty to fifty miles, when we knew it to be only two or three miles.

Now we turn our faces northward to the terminal point, San Francisco, over 500 miles distant, not expecting anything outside the usual routine of travel until we reach that point. After passing the mountains a few miles north of Los Angeles, around the "loop," so called because the railroad here in going around a mountain passes over itself, and going through the Mojave Desert, which is in reality a veritable desert, we are halted at the town of Tulore, at which the usual banquet and carriage ride were prominent features. Here are found numbers of artesian wells, but for which the difference between this and the desert would not be great. For it is believed that if what is now a desert could be supplied with water it would "bloom and blossom as the rose." At any rate Tulore is surrounded by fields of alfalfa, orchards of most kinds of deciduous fruits, as well as large and well cultivated vineyards. We are now in the San Joaquin Valley, and away we go with nothing to interrupt until we reach Fresno, where we are again side-tracked, taken from our sleepers, hustled into carriages drawn by the finest steeds we had yet encountered. We were shown around the country from eight to ten miles, and returning to the town were introduced to the ever present banquet. With one accord it was agreed that for growing grapes and converting them into raisins, this was the best place we had struck. Probably the one thing of greatest interest to our company here was the Barton Vineyard. This covers one section of

land one mile square. This sold seven years ago for \$12,400, but was recently purchased by an English syndicate for \$1,000,000. It is beautifully laid out in four squares, the residence, winery, etc., being in the center, which are reached from the four points of the compass by fine drives lined on either side with Lombardies and other beautiful trees. It may be said that all trees in California are beautiful, so different in appearance from the same varieties grown here that one scarcely recognizes them. This may be attributed to the great fertility and depth of the soil, some places reaching 300 feet deep. In the recent purchase of the English syndicate was included 685,000 gallons of wine then in the winery, 285,000 gallons of which were made last season. Uncultivated lands were not held at such extravagant prices here, hence some of our people made investments. It was the improvements and high state of cultivation which made the Barton estate so valuable.

Now we reach the beautiful city of Oakland, where we bid adieu to our sleepers and are met by a committee of the Board of Trade of California, who obstinately refused to allow us to pay any boat or street car fare, and a ride of six miles across the beautiful "Bay of San Francisco" lands us in the magnificent Palace Hotel in the metropolis of the State. The situation here is so much better described by Prof. Ridpath than we can do it we give it in his words, to-wit: "The softest bed in the world is that of a tired traveller. You sink upon it with an infinite sigh. Your ideas lose their form and swim into indistinctness. Meanwhile your body spreads out flat and flatter on the bed, 'til, in the language of my friend, James Whitcomb Riley, you 'drip over the edges just like molasses.' For ten days we had done our sleeping in Pullmans—a pretty good job, too, in its way, but, after all, dry land sleeping is the best. It has more body and stability. A man in his close berth in a palace car will dream a long time before he sees the angels or hears a voice out of paradise." Just imagine, if you can, the situation after having been cramped for want of room, and tossed about, subjected to flying sand, dust and coal smoke for ten days and nights, then suddenly finding yourself in a large, commodious, well ventilated room, furnished in modern style, with bath room and all other conveniences, then you see it as we enjoyed it. After a night's rest the Board of Trade had us out early, rushed us into the cable cars and out to Golden Gate Park and to the great Pacific Ocean, the sight of which was the first to most of us. About 200 yards from the water's edge the celebrated seal rocks reach from thirty to fifty feet above the water, on which may be seen from 100 to 200 seals lazily sunning themselves.

After remaining in San Francisco a day, we go to San Jose, fifty miles south, at which place was held our first meeting. This town is situated in the Santa Clara Valley, one of the most fertile and probably the best cultivated of any in the State. The soil is as black as the blackest found on the prairies of Iowa and Kansas, and its productive qualities even greater. We were reliably informed that in places near San Jose, where they have bored artesian wells, precisely the same soil as is found on the surface continues to a depth of over three hundred feet. When considered in the light of the fact that this valley produces in abundance not only all the varieties of fruits, vegetables and cereals grown east of the mountains, but most kinds of semi-tropical fruits as well, it is not to be wondered that the citizens of this valley claim it is the "garden spot" of the State.

On the morning of January 24th the first session of the American Horticultural Society was held in the auditorium of the Baptist Tabernacle. As the printed proceedings of this meeting are given very fully and completely by the society's able secretary, we will only say the sessions were numerous attended, especially by the citizens of California, who took a lively interest in its proceedings. The citizens vied with each other in their efforts to extend their hospitalities to us, their guests. We were made to feel we were at home, and each guest was ready to affirm that his or her home was the best of all. It would be base ingratitude were we to pass this point without making special mention of our particular host and hostess, Mr. and Mrs. E. O. Smith, who made us feel, although we were far away from loved ones at home, we were with near and dear friends.

One of the novelties in this vicinity is an olive ranch or orchard composed of eighty acres, and owned by a company of Englishmen. The olives were yet on the trees although ripe and jet black in color. We were informed by the foreman that in this condition they made better pickles than when green, in which condition the article of commerce is only seen. This establishment does not pickle them, but manufactures the oil.

Not desiring to make any invidious distinctions, and being determined not to exaggerate, I am compelled to say right here that the banquet arranged by the good ladies of San Jose excelled in every respect anything of the kind by us seen before or since.

At the close of the meeting at San Jose, we were whirled down sixty to eighty miles to the sea coast towns of Monterey and Santa Cruz. While this trip was a pleasant one, time and space will not allow of detail. Here we are again at San Francisco, resting at our perfect home, the Palace. Now many pleasant surprises confront us. We were informed that the Southern Pacific Railroad Company and the Sleeping Car Company had determined to make us their guests, and had planned a series of excursions through the Nappa and Sacramento Valleys. The first stop was at Nappa city, the home of Hon. M. M. Estee, who had accompanied us much of the time occupied in that portion of the State, and who, by the information he was always ready to impart, added much to our enjoyment. This is one of the fertile valleys of California. Here we were banqueted at 10 A. M., and at 1 P. M., same day, the banquet was repeated at St. Helena, and again at 9 P. M., in the Capitol building at Sacramento. Here we met many old Indiana friends, one of whom was Secretary of State Hendricks, brother of the late A. W. Hendricks, of this city. Our reception at the Capital of California was on a magnificent scale, and all who did not over-load were happy. After a night in our sleepers, on the side track, we were whirled away to the north, and made stops at Marysville, Oroville, Chico Vina, Red Bluff and Redding, our terminal point. Here we are 900 miles north of where we entered the State, in sight of Mt. Shasta, and never at any time out of the "orange belt." Oroville is located on Feather River, heretofore noted for its rich gold and silver mines. These mines were worked by what is called "gulch mining." The law of the State now does not allow this kind of mining on account of its filling the Feather and Sacramento River beds, and causing disastrous overflows. Leaving Redding, our faces are turned toward San Francisco, stopping at Woodland, where the usual banquet was spread,

thence to the metropolis. The most notable features of this trip were the very fertile and productive character of the soil, the great variety of the productions, the high average, and uniform temperature, ranging from 60° to 68°, and the courtesies and hospitality of the citizens. Our transfer again from our sleepers to the Palace was most agreeable. Upon invitation, next morning, we crossed the bay, passing through the celebrated Golden Gate, then by rail entered the Sonoma Valley, visiting the redwood regions at and near Guerneville, returning to Santa Rosa, where eating and drinking on the part of too many, and speech making were the order. Here, on the 3d day of February, we saw the first peach trees in bloom.

A previous invitation having been given by Hon. W. T. Coleman to visit the beautiful suburban town of San Rafael, about thirty miles distant from San Francisco, we started out on the morning of the 4th of February, to that place. The special feature of that occasion as announced by Mr. Coleman, was to be a "bull's head breakfast."

Recognizing the fact that I can not give the subject of this breakfast justice (as I could not do the breakfast itself justice), I again respectfully refer you to the description given by Dr. Ridpath, on page 300 of his "Beyond the Sierras," found in the transactions of the American Horticultural Society. Returned from San Rafael to San Francisco, where, we spend a day and night sight-seeing. Thence away down to Riverside, over 500 miles, where the second section of our meeting was held. Here we found the town so full of visitors that it was very difficult to find entertainment—some of us having to seek lodging in the country. The sessions here were not less interesting than at San Jose. As at San Jose a citrus fair was in full blast. The former excelled the latter only in the superior quality of its citrus fruits, while the latter excelled in the quality of deciduous fruits. For the proceedings of this meeting I must again refer you to the published transactions of the American Horticultural Society.

Riverside has the reputation of being the garden spot of California. It did not so impress us. While it probably excels in the production of the "Riverside Navel Oranges," and possibly some other citrus fruits, it does not produce that great diversity of fruits, vegetables and cereals that some other portions do. At the close of this meeting we "broke ranks," some returning home over the Santa Fe, others visiting other points.

About forty of us went to the extreme southern part of the State to visit San Diego. This is a wide awake, flourishing place, which promises to become a commercial city of some importance. Crossing an arm of the Pacific we are on the Del Coronado Beach, where two objects of interest are visited, namely, the ostrich farm and the Del Coronado Hotel, which is said to be the largest hotel in the world. It is situated within forty feet of high tide, has a square court of half an acre, has a dining-room seating capacity of 750, and a breakfast-room in which can be seated 350. Some of the floors are composed of onyx, and the material of the whole building is of the best quality, and finished with exquisite taste. This squad is now divided into smaller fragments, and a solitary three of us wend our way for the third time over the road from Riverside to San Francisco, traveling over 3,000 miles in the State. I am admonished by the length of this paper that I must not go into the, to us, interesting details of our homeward trip. Salt Lake

City, the Green River Country, the Black Canon, the Gunnison, Marshall Pass, the Royal Gorge, the Grand Canon, Pike's Peak, Colorado Springs, and Denver must all be passed without comment for want of time. After traveling over 10,000 miles, without an accident or a scare, we are at home. Well, I am asked, would you like to live in California? I answer no, with a reservation something like this: If I were forty years younger, with the disposition I have to cultivate and handle fruits, I think I should want to go there, for certainly, no other country in the world is so well adapted to that avocation. With all of California's glories and advantages, it has its serious drawbacks. Among the disadvantages are a want of water and fuel. They have to climb for water and dig for fuel. The scarcity of the latter compels one to sit and sleep in rooms uncomfortably cold. This induces colds and pneumonia. Another drawback is the scarcity and consequent high price of lumber for building purposes. But these are not without their compensations. The most pleasant climate in the world, the expansive and fertile valleys, the picturesque mountain scenery, the large-hearted generosity of its citizens, its fine fruits and vegetables go a great way toward obscuring any untoward conditions one may encounter.

SLYVESTER JOHNSON,
Irvington.

On motion of Professor Troop, Professor Webster, who is detailed by the United States Entomologist to visit Australia in the interest of entomology, that he also make notes of the fruits of that country and prepare a paper to be read before this Association next year. Carried.

The Society adjourned until 9 o'clock to-morrow morning.

WEDNESDAY MORNING SESSION.

The Society met at 9 o'clock in the exhibition room for the purpose of discussing new varieties of fruit, President Furnas in the chair.

Persons having fruit on exhibition were called upon to hold up to view any new or interesting varieties they may have that were not generally known and give description and make such remarks concerning them as they saw proper.

DISCUSSION.

C. M. Hobbs, Marion County. The Mikado is of Japanese origin. Peculiar in shape, more like an apple than a pear. It is a late keeper, keeping all winter, never desirable to eat out of hand, but cooks well. Tree a handsome grower, large, thick, dark green leaves, and striking in appearance. It is somewhat tender in tree as regards cold. The Indian apple originated in the southern part of the State. These apples were grown on young trees that bore very full, and the specimens exhibited are not more than one-half the usual size. They are of fair quality and productive; keeps well. Tree good grower and hardy. Color not very bright. Bears young. Pewaukee, seedling of Duchess; fruit large; bears young. I do not know much about the quality, but it is recommended as a fair eating and cooking apple. Some are of brighter color than others.

W. A. Workman. It is a little chokey.

Dr. Furnas. It is not a fancy apple, but cooks well.

C. M. Hobbs. Here is the Mann apple. It runs uniform in size and when fully ripe takes on a handsome straw color, keeping till apples come again. Tree hardy; rather late coming into bearing. As to productiveness here I can not say. Quality rather poor. Keiffer pear. I do not know of any pear that bears so young and so good a crop as the Keiffer. There is a diversity of opinion as to the quality of the Keiffer; it is a matter of taste to everybody. I have eaten them when I would as soon eat them as any pear. At best they have a pineapple, spicy and somewhat acid flavor, that is agreeable to my palate. The Lawver is a medium to large apple. Tree a good grower both in the nursery and orchard. High color. Tree tardy in coming into bearing. I have heard the complaint that it was a shy bearer. It is not a very profitable apple, but good keeper. The Delaware Red and Lawver are considered by some as being identical, growing much alike and fruit the same. I am of opinion that the Delaware is distinct. Mr. Corsa and others testify to the early bearing of Delaware Red Winter. That is not a characteristic of the Lawver. Mr. Van Deeman, United States Pomologist, thinks they are not the same. The Kentucky Red Cider Crab, grown in Southern Indiana and Kentucky for cider, yields a large quantity of cider of good quality. The season is from now on. We have here the New England Red, called York Imperial. This is a mistake. The latter is a new variety not fruited much in the West. Comes to us from the East and is popular there, and where fruited in the West is popular. Tree twiggy in growth, something like the Jonathan. The Salome is attracting considerable attention. They are small, core large; tree productive; keeps late, and is juicy and sprightly to the last.

Mr. Burton. I am somewhat familiar with the Red Cider Crab, having been acquainted with it for eighteen years. It makes cider similar in quality to Hews' Crab. It is larger than the Hews and better every way. (Mr. Burton exhibited a specimen of the cider.) My Rome Beauties were grown without cultivation, and were nice, as were also my Tulpehocken. (Showing Rome Beauty and Tulpehocken, which were large and fine.)

S. H. Frazier. I present an apple which Dr. Furnas says he has fruited for eighteen years. It is always reliable, sweet; called Osborn's Sweet; a good bearer. It will keep until March.

W. A. Workman. I have a new apple, known in Clay County as the Buckeye, because it comes from Ohio. It is a wonderful bearer and a wonderful keeper. Trees both small and large bear well.

C. M. Hobbs. It is the Lansingburg and no mistake.

Dr. Furnas. If Mr. Ragan was here he would say it was a street tree. James Little of Cartersburg, has it planted along the roadside for fence posts.

W. A. Workman. The Missouri Pippin bears early; never fails, keeps all winter; it is hardy with me.

C. M. Hobbs. It holds its foliage late in the season; sometimes they bark burst, and winter kill in the nursery.

Mr. Dinsmore, Bloomington. I have this apple; it bears well every year.

C. M. Hobbs. Here is the Mosier Sweet; it was brought from Carolina or Virginia to Putnam County, by Mr. Mosier, many years ago.

Dr. Furnas. I understand it came up from an old Indian village in this State. It is a fine tree.

C. M. Hobbs. The quality is good. It is a large and good keeper.

Dr. Robinson. The first plantation where the Mosier Sweet first came under notice was in Owen County, near Quincy. An old gentleman, who, I think lived in Putnam County, visited the settled plantation and found it bearing. This was twenty or thirty years ago, and the tree is still healthy and doing well. It was on the farm owned by Mosier and his daughter, Mrs. Dorsey, whose memory goes back over the history of this apple from the old tree, is quite familiar with its origin. It now stands on the old farm and is a healthy tree, while others are not so well. It furnishes nice fruit each year. It is some ten or twelve miles southeast of Greencastle. They keep it over there until March, April and even May. The color is a slight blush on yellow ground. It is golden yellow when ready for use. It is an elegant apple and none will get cheated who raise it.

W. A. Workman. It is not a good bearer every year.

Dr. Robinson. There is an off-year occasionally.

A. Glenn. I move you, sir, that a committee of three be appointed to look after seedling fruit.

C. M. Hobbs. I think this suggestion a good one. Carried.

Dr. Furnas. I have the Indiana Favorite which is rising and deserving. It is an apple of great promise.

S. Johnson, Marion County. It originated on the north side of Fayette County. Peter Mortz, sixty years ago planted the seed of the Vandevere Pippin, and among many trees, this one, the Indiana Favorite, sprang from that, which is good—one of the best. Fine keeper and an excellent bearer.

Dr. Furnas. Thomas Morris has done more to introduce that apple than any one else and I have done all I can to disseminate it. I also have the Jonathan, Dr. Watson, Grimes Golden and Ross Nonpareil; they are old but good apples.

Mr. Hobbs. The Dr. Watson is a rough, stocky tree, but when you know the quality of the apple you want it.

W. A. Workman. Are the White Winter Pearmain and Michael Henry Pippin the same?

Mr. Hobbs. The trees are distinct, but the fruits similar in appearance. One has brown seed and the other black. They are both inclined to scab. Michel Henry is almost sweet.

Dr. Furnas. There is little difficulty in recognizing the two. The Pearmain twig is dark, while that of the Pippin is lighter in color.

The Society adjourned to audience room, where it resumed work in regular session.

Professor Troop, of Purdue University, read the following paper relative to work at the experimental stations:

REPORT ON EXPERIMENT STATIONS.

Our experiments this year at the University have been conducted on a somewhat larger scale than heretofore, our grounds having been nearly doubled, so that now we have ten acres to be devoted exclusively to horticultural experiments. About one-fifth of this is designed for the growing of small fruits and an arbor-etum, and the balance for orchard fruits, the most of which has already been planted.

While the trees are small the intervening spaces will be devoted to the growth of vegetables—testing varieties, commercial fertilizers, methods of cultivation, etc.

Of orchard fruits we now have growing 75 varieties of apples, 18 varieties of pears, 25 varieties of cherries, and thirty varieties of plums. A portion of these were set in the spring of 1886, and of these, four varieties of apples and seven varieties of plums bore fruit this year. Of the apples, Titouka, Repka and Longfield ripened their fruit, but that of Champaign Pippin dropped when half grown. Titouka and Repka are both early, maturing in August, but Longfield keeps much better.

Of plums, Robinson, Golden Beauty, Rollingstone, Wolf, DeSoto and Speer started out well loaded, but the first two were the only ones able to withstand the attacks of the curculio and carry their fruit till ripe. I am confident that Robinson will do to recommend for general cultivation. Golden Beauty is a rapid grower and bears abundantly, but the fruit is small and ripens very late. In the latitude of LaFayette the first frosts found the fruit still on the trees.

Our lists of small fruits includes 25 varieties of grapes, 5 varieties of gooseberries, 12 varieties of currants, 13 varieties of blackberries, 25 varieties of raspberries, and 76 varieties of strawberries.

Of grapes we have Brighton, Concord, Duchesse, Early Victor, Eaton, Elvira, Empire State, F. B. Hays, Jefferson, Jessica, Jewel, Martha, Moore's Early, Moore's Diamond, Niagara, Poughkeepsie Red, Ulster Prolific, Vergennes, Wilder, Woodruff Red, Worden.

Duchesse is a complete failure, while Poughkeepsie Red and Ulster are feeble growers on our grounds. The rest are all worthy of recommendation.

The list of gooseberries might be named in about this order: Early Orange, Downing, Houghton, Industry and Mountain.

The list of currants comprise the following: Cherry, Red Dutch, White Dutch, Fay, Lee's Prolific, Moore's Ruby, Black Naples, Pale Red, Prince Albert, Raby Castle, Wilder.

Moore's Ruby and Raby Castle have not fruited yet, but of the others Fay takes the lead, while Black Naples brings up the rear.

Of blackberries we have: Crystal White, Early Cluster, Early Harvest, Erie, Evergreen, Gainor, Lucretia, Minnewaska, Stone's Hardy, Snyder, Taylor, Wallace, Wilson Jr., Windom.

Crystal White is of no account except as a curiosity. Early Cluster and Early Harvest are not hardy. Evergreen has no commercial value. Lucretia is

doing well. Minnewaska is doing very well. Wilson Jr. is of no special value. Windom did not do well this year on account of the drouth. Stone's Hardy, Snyder, Taylor and Wallace all do well.

Only a few of the following list of raspberries have any special merit here. The list includes Acme, Ada, Arnold's Hybrid, Brandywine, Carman, Caroline, Crimson Beauty, Crystal, Cuthbert, Earhart, Golden Queen, Gregg, Hansell, Hilborn, Hopkins, Merideth, Queen, Marlboro, Nemaha, Pride of the West, Rancocas, Reliance, Shaffer, Turner, Tyler.

Acme has done fairly well. Brandywine, Cuthbert, Hilborn, Hopkins, Nemaha, Reliance, Shaffer and Turner complete the list of valuable varieties here, so far as fruited. Carman and Earhart have not fruited. Gregg has not stood our severe winters very well.

The list of strawberries embraces the following varieties:

Atlantic,	Excelsior,	May King,
Bancroft,	Farnsworth,	Monmouth,
Belmont,	Ford's (Seedling),	Nobe's (Seedling),
Belle Bordelais,	Gandy,	Norman,
Bickle,	Garretson,	Ohio,
Bidwell,	Gold,	Old Iron Clad,
Black Defiance,	Great American,	Ontario,
Bombay,	Green Prolific,	Park Beauty,
Bonanza,	Glendale,	Parry,
Bubach's No. 5,	Glossy Cove,	Photo,
Captain Jack,	Haverland,	Pioneer,
Carmichael,	Henderson,	President Lincoln,
Cinderella,	Indiana,	Prince of Berries,
Connecticut Queen,	Itasca,	Royal Hautbois,
Cornelia,	Jersey Queen,	Sharpless,
Countess,	Jessie,	Sucker State,
Covill's Early,	Jewell,	Summit,
Cowing,	Jumbo,	Thomas's (Seedling),
Crawford,	Kentucky,	Vineland,
Crescent,	Ladies' Pine,	Wabash,
Cumberland,	Logan,	Warfield's No. 2,
Daniel Boone,	Longfellow,	Warren,
Dewey,	Lower,	Wilson,
Downing,	Mammoth,	Windsor Chief,
Early Canada,	Manchester,	Woodruff (No. 1),
Emerald,	Marvin,	Woodruff (No. 2).
Enhance,		

Out of the above list I am now ready to drop (from our grounds) Atlantic, Bancroft, Belle Bordelais, Bonanza, Cinderella, Countess, Dewey, Early Canada, Emerald, Garretson, Great American, Jewell, Marvin, Old Iron Clad, Parry, Prince of Berries, Royal Hautbois and Vineland. Bickle is a new berry, originating in the northern part of this State, and promises well. It has not fruited yet.

Bubach's No. 5, Crawford, Itasca, Jessie, Logan, Lower Wabash and Warfield's No. 2 are all excellent varieties. Haverland has not fruited here yet, but good reports come to me from different sources concerning it.

REPORTS FROM SUB-STATIONS.

J. N. Latta, Hawpatch, Lagrange County, reports as follows:

I have little to report this time except failure. It was very dry, more so than I ever knew it to be. I lost almost everything I planted last year and some things planted the year before. Some of my choicest shrubs and plants I kept alive by watering, but I could not serve all that way. I am glad that you like the "Bickle" strawberry. It did better with me than any other, without it might be "Haverland." That did real well, and as a plant producer it is wonderful. I don't think that I shall like "Itasca" or "Logan," "Jessie," "Jewell," "Summit," "Lida," or I might go on with thirty more and not find any as good as Crescent and Cumberland. I hope to like Haverland and Bickle as well as those, but am not certain yet. Industry gooseberry is too coarse, but does not mildew. Fay's currant was a great success this year. I made a bad failure in keeping curculio off the plums. Apples were a failure from drouth. Among melons, the old Ice Cream watermelon is yet the best, and Hackensack the best muskmelons. I have a cross between Banana and the old canteloupe that is early and very prolific and good (*not best*). It will bear melons, and that is more than some of the rest will do. I have grown it three years, but can't make it distinct as I should like. The Rural New Yorker's tests of potatoes so far as I have tried the same kinds agree with my tests, therefore I shall expect a success with their No. 2 next year.

Report of J. T. Moss & Sons, Ashboro.

Our list of 1887 comprised apples, pears, peaches, apricots, plums, currants and raspberries. They were planted on a rolling, well-drained plat, having a loamy soil, naturally fertile and whose fertility was increased by generous manuring. The first summer they were given garden culture; were well mulched for the winter, and during the past summer were mulched to keep down weeds, grass, etc.

APPLES.

Indian—Vigorous, upright, perfectly hardy.

Titouka—Vigorous, branching, hardy.

No. 284—Very vigorous, scraggy, hardy.

No. 447—Vigorous, scraggy, hardy.

Antenonka—Very rank; similar to 447.

PEARS.

Bessemianka—Foliage thick and leathery, dark green and perfectly healthy. The bark is thicker than our natives, and is liked better by the rabbits. We note to-day, December 3, that the rabbits have skinned one tree, though no snow has fallen, and corn is standing in the field.

No. 4 M.—Only moderate growth; no bloom, no disease, hardy so far as tried.

Apricot—Hardy, vigorous; bloomed freely, but set no fruit.

PLUM.

Arab—Moderate grower; hardy, no blossoms.

Robinson—Vigorous, healthy growth; blossomed profusely; set considerable fruit, but large percentage stung by curculio; in size and quality the fruit is about equal to our best native or wild sorts.

PEACH.

Rosser—Very rank grower; foliage diseased, apparently resembling the "yellows;" has borne no fruit, but is full of fruit buds for 1889.

RASPBERRY.

Ohio—Complete failure; winter killed in 1887-8; died back in summer of 1888; has never bloomed, nor set a single tip.

Golden Queen—Failed to grow.

Tyler and Gregg are especially fine.

CURRANTS.

Red Dutch fruits well with us.

The following strawberries were received in spring of 1888, but the plants made a very poor growth, so the test was not a fair one: Gandy, Haverland, Carmichael, Norman, Mammoth, Logan, Monmouth, Photo.

We have a fine pear orchard that came into bearing this year, the following varieties, all dwarf, are represented: Duches, Seckle, Tyson, Clapp's Favorite and Louisa Bonne de Jersey. Of these, the Duchess, is certainly first in size and productiveness, being of fine size and shape, and very prolific. The Jerseys also bore well, but were smaller.

Grapes of all varieties failed with us this year.

Report of Jonathan Beard, New Albany.

APPLES.

Antenovka, Red Anis, Moregi and Titouka made a fair growth. No. 368 and No. 161 made a strong growth. I have fruited the Lawver and Yellow Transparent this year for the first time. The Lawver is above the medium size, color light red striped, very hard, has the appearance of a good keeper. The Yellow Transparent bids fair to take the lead among our early varieties. The fruit is fair size, light yellow color, and pleasant flavor. I sent one of the apples to Messrs. Albertson & Hobbs that measured eleven inches in circumference.

PLUMS.

DeSoto and Weaver made a fair growth. Robinson, a vigorous grower, produced a fair crop of fruit this year. I think it is the best of all red plums. The fruit is not so large as the Wild Goose, but is a darker red, firmer, and does not drop off so easily. Prunus Simoni made a very fair growth, seems perfectly hardy. One of my trees bloomed last spring, but set no fruit.

RASPBERRIES.

The Cuthbert is the most profitable of the reds. The Turner is also a very popular and profitable berry here. The Marlboro is one of the finest berries, and always demands fancy prices, but it is not a vigorous grower, and winter kills to some extent. Shaffer's Colossal is the most vigorous and prolific, but will not sell on account of its dull color, and it is too soft for shipping. I have discarded it. The Miami and Mammoth Cluster are the most profitable black caps. The Souhegan is our best early variety. The Gregg is growing in favor, though it is not so prolific as either of the others.

BLACKBERRIES.

Ancient Britton very prolific, larger than Snyder, quality good, perfectly hardy. Snyder very prolific, berry rather small, hardy. Taylor larger than Snyder, better quality, not so prolific, hardy. Early Cluster not hardy. Have discarded it.

- Black Naples currant has never produced any fruit, shall discard it.

GRAPES.

Worden bore a few clusters, quality fair, moderately vigorous. Brighton bore a few clusters, berry large, flavor does not suit my taste; somewhat like the Pawpaw; vigorous grower. Pocklington, also bore a few clusters, quality best, moderately vigorous. I have quite a number of other varieties that will fruit next year.

STRAWBERRIES.

The Downing still leads all others for market. Crescent Seedling, growing in favor here, very prolific; if it were larger, would be, perhaps, as extensively grown as the Downing. Cumberland Triumph is the finest berry grown here, though a little soft; it always brings fancy prices; very vigorous but a shy bearer. Parry and Jewel very weak growers; have discarded them.

Report of L. B. Custer, Logansport.

APPLES.

The different varieties of Russian apple trees have done well except (as reported one year ago) the Moregi which was so badly winter-killed that not one of them will ever make a tree. Last spring I transplanted to the orchard six Antenovka, one Titouki, one No. 378 and four Longfield; they made but very little growth on account of dry summer and fall.

PEARS.

The Bessemianka and Sapieganka pear continue to prove very hardy; they made a fair growth for this season.

CHERRIES.

The Brusseler Braune was transplanted to other grounds and made a fair growth; the tree resembles the Early Richmond very much. The Geo. Glass is very much of a dwarf.

PLUMS.

The DeSoto, Robinson, Golden Beauty and Prunus Simoni plums that were not transplanted made a good growth. The Robinson and Golden Beauty fruited the past season.

GRAPES.

The Ulster grape is rather a slow grower; not fruited with me. The Woodruff received last spring made very feeble growth.

RASPBERRIES.

Golden Queen raspberries continues a very shy bearer. Ohio and Brandywine do not bear very full. Lucretia Dewberry made a fair growth and ripened a few small berries.

STRAWBERRIES.

The Atlantic and Jersey Queen strawberries are rather poor growers and not good bearers on my ground. Last spring I received eight varieties of strawberry plants; Norman, Monmouth, Photo, Haverland, Logan, Mammoth, Gandy and Carmichael; a few of each variety made a good growth.

CURRANTS.

The White Dutch currant bore a light crop of fruit. Last spring I received two Lee's Prolific currant; one of them made a good growth. I also received Moore's Ruby which made a very feeble growth.

Report of A. Glenn, Columbus:

APPLES.

Longfield and Borsdorfer have proved very vigorous and hardy. Shiawasse Beauty, the first in nursery to drop leaves; wood appears to be well matured; tree a moderate grower and think it perfectly hardy.

PEARS.

Bessemianka, growth moderate, upright habit, hardy. Sapieganka, growth vigorous and stocky, spreading habit, hardy. Keiffer, takes the cake as an early and abundant bearer.

CHERRIES (RUSSIAN).

Riga No. 109, growth very strong, foliage good, the most vigorous grower yet planted; a very small tree received from Professor Boad in the spring of 1886 now measures $2\frac{1}{2}$ inches in diameter. Morello Fruhe, vigorous growth, upright habit, diameter $2\frac{1}{2}$ inches; this the first to fruit, ripened July 12, quality good, size of Richmond. Ostheim, growth vigorous, healthy, hardy, spreading, diameter 2

inches. Griotte Imperial, growth fair, healthy, hardy, spreading, diameter $1\frac{1}{4}$ inches. Griotte DeOstheim, growth moderate, healthy, hardy, spreading, diameter $1\frac{1}{2}$ inches. Gros Lang Loth, growth slow, healthy, hardy, straggling, diameter 1 inch. Amorello Bouquet, growth slow, healthy, hardy, shapely, diameter 1 inch. Wragg, growth slow, healthy, hardy, shapely, diameter 1 inch. Tutovka, growth slow; November 29 the only variety retaining its leaves.

PLUMS.

Prunu's Simoni, growth fair and stocky, hardy, not fruited. Prunu's Pisardi, growth vigorous, esteemed for its foliage, hardy, fruit killed by late frost, as was P. Simoni DeSoto, a valuable late variety, tree hardy.

GRAPES.

Ives and Concords hold their own, the former not mildewed. Brighton, Elvira, Vergennes, Worden, Moores and Niagara quite satisfactory in vine and fruit. Crops seriously injured by frost of May 14th.

STRAWBERRIES.

Injured 50 per cent. by late frost. Crescent, still our market berry on account of vigor and productiveness. Jewell, not a success, lacking in vigor. Bubach, plants most stocky, foliage perfect, fruit large and quality among the best; we like it, though not enough runners. Of the varieties last planted Carmichael leads the mall ten to one. Haveland, Norman and Photo are fairly vigorous, but foliage rusts. Logan, foliage good but not vigorous. Gandy, Monmouth and Mammoth failed to grow.

CURRANTS.

The older varieties succeeding fairly well. Raby Castle and Moore's Ruby show good foliage, good growth, promise well. Lee's Prolific not so vigorous.

GOOSEBERRIES.

Houghton for early, excellent, abundant bearer. Downing follows adds two weeks to the season and many sheckles. Couldn't do without either.

RASPBERRIES.

We like Cuthbert, but we shall continue to pick Turner. Shaffer takes the cake for big berries. Gregg and Souhegan about complete the list with us.

BLACKBERRIES.

Early Harvest has distanced all competitors for two years.

Mr. Chandlee made report on his experimental work :

"I will say that I received a few strawberries and currants which were kept too long in the express office. I planted and shaded them carefully, but none of them pulled through. All the trees I received of the Russian varieties did well. One peach tree in the lot died, the only one that I received from the University. The strawberries I received two years ago, Lake Ontario, Manchester, and several other varieties, I have discarded them. I have no strawberries growing equal to Crescent for early, and fertilized with the old Ironclad, and Mt. Vernon, for medium to late. From forty or fifty varieties I have dropped down to those two varieties for home and market."

Prof. Troop. Does the Ironclad fruit well?

Mr. Chandlee. No, but it is a good fertilizer for the Crescent. I sometimes use the Captain Jack as a fertilizer for the Crescent. The old Ironclad will pick right in with the Crescent. The Bidwell is a different berry, but will gather about the same time. As to blackberries, I consider the Snyder the best. I have some other varieties, among them the Taylor, which is good, but no better than the Snyder.

Dr. Furnas. One is late and the other early.

Mr. Chandlee. There is not much difference. I have six or seven varieties which I have tested, but have found them unprofitable. For a few varieties I would only recommend the Taylor and Snyder. I am not in favor of too many varieties. Raspberries, I want the Tyler, Mammoth Cluster and Gregg. My canes last spring were not in first class condition. I attribute it to late cultivation. The summer was dry and remained so until late. I had to do my cultivating in August. I never want to cultivate after the first of August. Fall rains set in and they grew vigorously until stopped by winter. Next spring they were in poor condition. For red raspberries I use the Cuthbert, Turner and Crimson Beauty. Turner and Cuthbert are best. Golden Queen, Hansell and Marlboro are poor growers, and not much for fruiting.

Theo. F. Longenecker, of Dayton, Ohio, read the following paper on

THE STRAWBERRY.

You do not need a treatise on the origination and classification of the strawberry. You do not need to be told how good it is; but if anything can be said that will enable us to make our profits surer, to lessen the cost of production, to render cultivation easier, or to aid us in producing such superior berries that they meet with no competition, but command their own prices when placed in the markets, then we who sometimes find the balance on the debit side will feel that papers and discussions are not in vain.

To accomplish these things we must secure testimony from all available sources and carefully weigh all the evidence that presents itself. All this must be used in connection with, and be modified by, our own observations and experiences. It is necessary for us to fortify ourselves against all mischances that we may secure the full benefits of our labor. It is true there are places where competition in berry-growing is not so great as to exact such care and labor of the grower, but it is liable to become so throughout Indiana and all the surrounding States very

soon, and he who is forewarned should be forearmed. The picture is not a gloomy one. Such circumstances develop the true horticulturist. It is an honor to our profession that forty to seventy-five bushels of strawberries per acre will not yield such enormous profits as they did in many localities twenty years ago. It is not only an honor to fruit growers, but it is a great benefit to the consumer that we are compelled to grow not the minimum but the maximum yields.

In speaking to the public about the strawberry it is necessary for us to bear in mind how the strawberry has been doing for the public—or the average cultivator—for in so doing we are liable to be nearer future probabilities, so I now beg of you, my intelligent hearers, that if I say anything of which you can not approve to apply it to the cultivator not so intelligent or expert as yourself—to the average man.

There is no other fruit cultivated in this latitude that is so susceptible to the influences of soil, cultivation and the weather as the strawberry.

Have you observed the variation in size and flavor of the same variety when in different soils? This difference is sometimes so great as to confuse us in regard to varieties. In some varieties this is more noticeable than in others. Berries of the Bidwell, when gathered not more than twenty feet apart in the same row, have been mistaken for different varieties. In some soils the Bidwell is as sweet as a well ripened Sharpless, whilst in a cold, damp, heavy soil it is very sour and has so little of the strawberry flavor that even the most ardent lover of that fruit is disgusted when he tastes it. The disregard of the adaptability of certain varieties to certain soils very frequently inflicts great loss on the cultivator.

There are some soils in which every variety of strawberry does well, but we are not all so favorably located. Sometimes it is necessary for us to plant in fields in which the soil varies. Then a knowledge or a lack of knowledge of the peculiarities of varieties may result in a profit or a loss. If great care is not used by the grower the yield of the strawberry depends very much upon the condition of the weather from the time of planting to the time of the ripening of the fruit. In fairly good soil, with favorable weather from the time of planting to the gathering of the fruit, the ordinary grower may secure a profitable yield, whilst with unfavorable weather he would be poorly repaid for his outlay of labor and plants. The skillful, intelligent cultivator will overcome the bad effects of unfavorable weather.

This brings me to an important part of the topic—cultivation. I do not know whether to say cultivation or the cultivator.

I shall use the word cultivation in its broadest sense—preparation of the soil, planting, cultivation and mulching. The yield of the strawberry varies all the way from nothing to four hundred bushels per acre. ("Four hundred bushels per acre! Now, that's a whopper!" I hear some one say. Please don't accuse me of misrepresenting, I got it out of some catalogue.)

This great difference is brought about by cultivation. Two of the adages closely connected with strawberry culture until within a few years ago were "poor ground for strawberries," "rich ground forces a growth of tops." Well, we followed these beliefs as long as we could. E. W. Durand worked his soil to the

depth of two feet, using plenty of manure. Many persons saw his seedlings fruiting, or heard of them, and bought them, expecting that they would do so every where. The Great American was great only whilst in Durand's hands. The reputation of the strawberries grown at Barneville, Ohio, and the story of their high prices at Chicago, has spread over all Ohio. When our Ohio horticulturists visited that region they found that *manure* was doing a large part of the work. J. M. Smith, of Green Bay, Wis., secures enormous yields. How? The answer is a soil well adapted to the growth of strawberries and plenty of manure. John Beaver, of Dayton, Ohio, has acquired almost a national reputation as an amateur strawberry grower. For fourteen consecutive years he has grown strawberries on the same piece of ground. They excel any grown in Ohio. How is it done? The ground is worked to a depth of fourteen inches, the plants are not allowed to crowd each other, and plenty of manure is used. When shall the planting be done? In early spring. If you realize the wants of the strawberry plant it is possible to grow profitable crops of berries by planting at other seasons of the year. Mr. Miller, of New Philadelphia, Ohio, is a very successful strawberry grower, and much of his planting is done in July and August.

In reply to the direct question would you advise planting at that time of the year? His answer was, "nine-tenths of the growers will fail if they attempt it." If the planting is not done in early spring it should be done as soon thereafter as young plants can be secured. June is preferable to July, July to August, and August to September.

The distances for setting these plants would vary with the season of planting. If set in early spring we should aim to get the largest part of the fruit from the plants made by the parent plant. If set in the summer we should not allow the plants set to make any runners, but would secure all the fruit from the plants set. The severe drouth of 1887 taught us the necessity of thorough cultivation as a means of retaining moisture in the soil. In fact, nearly all realize what a few then practiced it. The preparation of the soil, the cost of plants, and the planting of a bed of strawberries are all so expensive that he who will go to all that trouble and then let his plants suffer from a lack of cultivation, i. e., cleanliness and moisture, is surely an improvident man. If planted in early spring, in rich soil, the plants should, by the middle of July, be sending out their runners. As soon as practical the sets should be fastened where wanted by pressing them into the earth and putting a little dirt on them to hold them until rooted.

What distance apart should the sets be placed? That is a little owing to the variety. Cumberland Sharpless, Jessie and berries of that class should be about eight inches apart. The Crescent will fruit better when crowded than any berry I now think of, but even the Crescent does better when the plants are not too close together. There is no mystery about the distance plants should be from each other, only strong vigorous plants can produce a large amount of fine fruit. A weak plant can no more produce the berries that a strong vigorous plant can than a child can do the work of an adult. It is just as reasonable to expect the one as the other.

Strawberries are often injured by continued freezing and thawing in winter and early spring, when it is not suspected, and on soils supposed to be proof against

injury from this source. There are few soils in this latitude in which uncovered plants are entirely exempt from injury by continued freezing and thawing, and often it will be found on close examination that a portion of the roots, whilst apparently healthy, are so injured that the plant receives no nourishment through them. On examining the roots of a plant, we should look carefully at the base of the crown, and one-fourth of an inch down the roots. Break the root at this point, and if brown in the interior it is injured and will die, although there may be no indications of disease except at this one point. There may be other roots to the plant that have sufficient vitality to sustain the plant in an imperfect condition, and to ripen some inferior fruit, but we may feel assured that in proportion as the roots are injured the yield and quality of the fruit is lessened. The mulch should lie close to the ground and well around the plants. A fine mulch is better than coarse, and cut straw seems more desirable than long straw, for the wind drives it close about the plants, and even when the mulch is thick it does not prevent the plants coming through at the proper time in the spring. The mechanical effects of the mulch, aside of the prevention of injury by frosts and rain, will amply repay us all the expense of mulching. In other crops, it has been repeatedly observed where the surface has been mulched through the winter and early spring, that the soil is more friable and remains so long into the season than when not mulched, and that yields have been greatly increased by this effect.

The mulch remains on through the fruiting season, checks rapid evaporation and thus retains for the strawberry what it so emphatically demands—moisture. The temperature of the ground is lowered by mulching, and observations establish that where the mulch is light-colored frost may be found, when on adjoining grounds unmulched there is no frost; but as the bloom is generally a few days later on mulched ground our risks to frosts are probably not increased by mulching. As the temperature of mulched ground is lower than ground not mulched the berries will be a few days later. A few days earlier in the market has been in past years a matter of much importance to the grower, but with the present facilities for shipping we do not receive as remunerative prices for the early berries as formerly, so the mulch is no serious detriment in this respect. If the grower feels that earliness is a matter of much moment, then a dark-colored mulch would be preferable, because dark-colored bodies do not reflect as much heat as light-colored ones. Nothing has yet been said about varieties, and as strawberry growers are prone to be more interested in varieties than in cultivation it is best that something be said even though it be nothing more than a word of warning.

A veteran strawberry grower who is often asked, "Which is the best variety?" usually answers as follows: "Napoleon, which was the biggest cannon in his army, replied, 'That depends on who is behind it.'" This will apply to strawberries more especially than most other fruits, for the yield of the strawberry varies so greatly, according to the cultivation it receives. On a comparison of notes made by careful and intelligent observers, it is found that a berry that becomes standard in one part of a State is very likely to prove a standard variety anywhere in the State or in the several surrounding States; that the comparative values of berries are much the same over a wide range of territory, and that soil and location do not make as much difference as is commonly supposed. This last

statement seems at variance with one made some time ago in reference to the adaptation of varieties and soils to each other, but it must be borne in mind that the character of the cultivator changes the characteristics of the soil; that different methods of cultivation alter the comparative values of the different varieties; that where berry growers have preconceived notions about a variety it takes a long time for them to be convinced that they are wrong. In proof of this, note how long it took them to realize that the Crescent was the most profitable strawberry in cultivation, and the Old Iron-clad the most unprofitable. It is true that plant venders are to blame for this.

A large number of berry growers are just beginning to admit that comparatively the Sharpless is not a profitable variety to cultivate. I test nearly all of the more promising of the new varieties and think well of the Jessie, Bubach and other recent introductions, but if there is anything I would make emphatic it is this; money invested in manure and tillage will yield better returns than money invested in plants at two dollars per dozen. I do not wish to be understood as opposing the introduction of new varieties.

The indiscriminate introduction of every seedling regardless of whether it fills a want is a detriment to progress in strawberry culture. We have the experiment stations where the comparative value of varieties is established by careful tests. Let us carefully read the reports coming from them and learn to interpret the work done there, then the men at the stations will endeavor to meet our wants and we will be saved much of the expensive testing of new varieties that we are now doing. We do not want to be relieved of all responsibility in that direction for there is a certain pleasure accompanying it that the horticulturist can not find elsewhere.

The Secretary read the following paper prepared by Granville Cowing of Muncie, on "Experience With Small Fruits This Year."

SMALL FRUITS IN DELAWARE COUNTY IN 1888.

The fruit crop of Delaware County this year was probably the best it ever produced. This was due to the fact that last winter was the mildest known since 1857; the mercury never falling lower than six degrees below zero and fruit-bearing wood, for the first time in a generation, entered spring in perfect condition.

THE STRAWBERRY

Was the only one of the small fruits that failed to produce a fair crop. Drouth last autumn, which prevented the formation of new plants and destroyed many old ones, the almost total absence of snow last winter, followed by late spring frosts, and blight, did not allow it to produce one-fourth of an average crop of well-tried sorts. Crescent proved to be the most productive and profitable. No other well-known variety, blooming so early, can so well resist the effects of frost. Haverland may prove to be as good or a better early variety, but it has not yet been generally tested. Jersey Queen proved to be a much better late variety than Kentucky. In the size and beauty of its berries it is hardly excelled by any of the new varieties. It blooms so late that it is rarely injured by frost, is remarkably free

from blight, and is sufficiently productive to be profitable. Ohio blights badly, and is of no value. The same may be said of Belmont. It is free from blight, but is too unproductive. Cumberland, in consequence of frost and blight, produced but few perfect berries. This variety, recently so satisfactory and profitable, will probably soon cease to be cultivated in this region. Logan, Bubach and Jessie are three of the best varieties that have been recently introduced and tested. All are strong growers, and comparatively free from blight. Logan suffered as little from frost as Crescent, and was as productive as that variety. It produces some very large berries, but they do not average as large as those of Bubach, but are of better shape. Bubach is very productive, and its berries are uniformly large, of good flavor and fine appearance, but not uniform in shape. It is one of the best, and likely to be very popular. Jessie produced the largest berry I had this year—seven inches in circumference—but it did not produce as many as Logan or Bubach, nor did they average as large as those of Bubach, but it bloomed earlier, and was much injured by frost when blooming. Its berries are of good flavor, and very handsome. Those who have found Sharpless satisfactory will probably find this much better; in plant, berry and vigorous growth. Haverland strongly resembles Crescent, but I fruited it only on spring set plants, and can not yet express a positive opinion concerning its merits. Warfield also seems very promising, but I have not yet tested it on well-established plants.

Strawberry leaf-blight is increasing throughout the country, and threatens to make the best of our small fruits one of the most difficult to grow. All varieties are subject to it, but some to a much greater extent than others. Probably every experienced strawberry grower knows what is meant by leaf-blight, or rust, but there is a disease to which I have seen no allusion in print, which enfeebles and finally kills many plants by covering their roots with white mold or filaments, similar in appearance to the spawn of the edible mushroom. Dry, hot weather seems favorable to the development of this disease. Where it prevails it generally covers all decaying vegetable matter in the soil. Possibly it might be suppressed by a free use of lime when preparing the soil for new beds.

BLACKBERRIES

were very plentiful, of fine quality, and sold at moderate prices. All varieties bore full crops. Even Early Harvest, so tender that it is generally killed to the ground in ordinary winters, was alive to the tips, and bore a heavy crop of beautiful and delicious berries. I now understand why growers south of the Ohio River value it so highly. Agawam and Ancient Briton are productive, and of good quality, but not equal in value to Snyder, Taylor, Wallace or Stone. Snyder, on account of its earliness, hardiness, productiveness and compact growth is still the most profitable. Stone is as compact in its habit of growth, as productive, hardy and well flavored, but it ripens later. The berries of Taylor and Wallace are large and very sweet. Taylor is the latest in ripening, and is remarkably productive.

RASPBERRIES.

Of blackcaps, Tyler, Ohio and Gregg are most generally cultivated. They ripen in the order they are named. Of the three, Ohio is the most hardy and productive. Turner and Cuthbert are the leading red varieties. Cuthbert is, I believe, the best red raspberry now cultivated. Crimson Beauty has not proved satisfactory. Marlboro is promising, but has not yet been fairly tested. Shaffer's colossal, a purple variety, propagated from tips, with berries larger than those of any other variety, is becoming popular.

GRAPES

were never before so plentiful and cheap, or better in quality. Concord is most generally grown, but all promising new varieties are being tested. Martha is more generally cultivated than any other white grape. Those who have fairly fruited Worden, regard it as the best grape of any color, for all purposes. In earliness and flavor it excels Concord, and equals it in hardiness and productiveness.

It is not readily propagated from cuttings, nor is it a rampant grower. Its clusters resemble those of Concord, but this season they were more compact, and their berries larger.

GRANVILLE COWING.

Muncie, Ind., Nov. 20, 1888.

DISCUSSION.

S. Johnson. I wish to ask Mr. Longenecker if this tube can not be used in setting other plants besides the strawberry.

Mr. Longenecker. It may be used very successfully with other plants.

Mr. Johnson. How do you place this tube in the ground?

Mr. Longenecker. I set the tube over the plant, set my foot on it and press it down until the tube is about full, then take it up, and by pouring a little water on the plant they readily come from the tube. It is also convenient for removing plants from hot beds.

Mr. Johnson. The roots of the strawberry extend out. Would there not be danger of cutting them off?

Mr. Longenecker. While there is a portion which extends out, there are not as many horizontal roots near the surface of the ground as you might suppose. I find if the soil is good and mellow the roots extend at an angle of about 45 degrees, and it won't disturb many of the roots in taking up by this process.

S. Johnson. In regard to raspberries, the Marlboro has given the best satisfaction of any red raspberry I have grown. I am also well pleased with the Thwack. It is claimed by some to be a poor grower. It does not grow so tall as some others, and I like it in that way. It needs manure; that is the secret of success, in my opinion. As to what has been said against the Marlboro, I do not want you to be discouraged against trying it.

Mr. Longenecker. I don't want the Marlboro to go away with both eyes black. I had trouble in getting some plants started, but have some now strong and thrifty.

They are as easy to pick as blackberries. I made some ground rich and set Marlboro one foot apart. I shall set more of them in that way. I am well pleased with them.

Mr. Stevens, Wagne County. I enter my protest against the Marlboro. I have been trying for four years to raise that berry, and failed. They sprout bountifully and produce little fruit, with me, on naturally rich soil.

Mr. Frazier. The raspberry will not succeed as well on some soils as others. I have been trying to raise a crop on black soil, but they would winter kill or were affected by dry weather. I finally planted on clay land and applied manure. There is no sign of winter killing, and the dry weather does not seem to affect them. I have raised good berries for the last two or three years.

E. Y. Teas, Dunreith, Wayne County. I would ask whether the Golden Beauty plum is late. Mr. Munson, of Texas, sent them out as one of the earliest plums there is.

C. M. Hobbs. We received the Golden Beauty, Indian, Early Red, and some other southern varieties from Mr. Munson. He catalogues it as late ripening with the Heath cling peach, and this is about its season with us.

W. H. Ragan, Putnam County. I have had no experience in raising the Golden Beauty. The only specimens I have seen were sent here from Mr. Munson early in the season. They were ripe and excellent in quality. There is a peculiarity as in the Robinson plum. The Robinson is influenced greatly by location, even in the same orchard. A little shade from a tree makes a marked difference; they will vary three weeks almost in time of ripening. This is of the same class. The papers we have been having read I wish to give my general indorsement, and I hope the representatives of the agricultural press will note the prominent features of these papers. The Cuthbert raspberry I think is too tender. It is certainly more tender than some red varieties grown in the vicinity of Greencastle. The Bradywin is profitably grown here. We have had abundant success with the Gregg on high sugar tree land.

Mr. Glenn. The foliage and bark of the Golden Beauty plum are distinct from any other I have seen. The Golden Beauty has a leaf like that of a peach, with a yellow bark.

C. M. Hobbs. The first Golden Beauty plum I ever saw was at the meeting, four years ago, of the American Pomological Society, at Grand Rapids, Mich., early in September. The plum was on exhibition from Texas, brought there by Mr. Munson. That would make it a late plum here, if ripe in Texas in September. There may be two varieties—an early and a late. All trees of the Golden Beauty have a bright yellow bark, distinct from any other plum I know.

Mr. Glenn. The Early Harvest blackberry I think is worthy of attention. It is one really early blackberry that succeeds in this State. The first year after planting they are liable to winter kill but after that, by giving them some protection we will find it most profitable. The old canes should be left until spring, when they should be removed as they serve as a kind of protection during the winter.

Mr. Frazier. Some varieties are subject to rust,

Mr. Glenn. They never rust. The Snyder had more berries than Early Harvest but considerably later. It is a good berry.

Prof. Troop. What is the size of Golden Beauty plum?

E. Y. Teas. It is nearly round and larger than the Robinson. It is a freestone.

Dr. Furnas. I wish to ask if the yellow plum is any relation to the Golden Beauty?

Dr. Robinson. Mr. Workman has one he pronounced the Golden Beauty. The seeds were brought from North Carolina, planted it and was much pleased with it. The tree I obtained from Mr. Workman was a seedling from it. It is golden yellow when ripe. Bore a fine crop and later than the Robinson. Quality excellent.

W. A. Workman. They vary somewhat as all seedlings do. Dr. Robinson seems to have got one of the best. There is one peculiarity about the Golden Beauty, when they fall off ripe you can lay them away and they will keep for two weeks. You could ship them to London, England, if you wish. I wish to ask Mr. Longenecker what distance you would recommend setting strawberry plants, also, how many crops do you get before digging up the plants?

Mr. Longenecker. They should be set far enough apart to develop strong, healthy plants. The Cumberland and Jessie and that class should be eighteen inches apart in the row and rows about four feet apart. I get two crops and then plant again. When you take plants up in June you can get a crop next spring if not allowed to set runners. The second crop is the largest.

Mr. Stevens. I believe the market in the United States will never be overstocked. My plan for raising strawberries is to make my rows three and a half feet apart and set eighteen inches in the rows. I raise one crop and set again. There is no kind that will produce good uniform berries the second year. The number of varieties is legion, and to my mind we would be better off had we not half so many. The Jessie is being highly recommended by many, but in my opinion the fewer of that kind for commercial purposes the better. When you discard the Crescent be careful what you put in its place. When you crowd your plants the berries are small and you get little prices. The Logan is as fine a berry as I have ever grown; then when they do well, you don't get many small berries. The fact that some varieties are much more profitable than others and better adapted to certain locations makes it necessary that we should select with care. There are extremes; you can take the catalogues of some of our eastern growers where they manure heavily and if you follow their directions you will burn every thing you plant. These are points demanding careful attention, and every man should be a scholar and should also be his teacher. We can not take those fancy catalogues as a guide and raise four hundred bushels to the acre.

W. H. Ragan offered the following resolution:

WHEREAS, The Congress of the United States has passed a bill which only remains for some minor adjustments by a conference committee of the two houses, and the approval of the President to become a law, which entitles the interests of agriculture and kindred arts to a representative in the Cabinet councils of the nation; and,

WHEREAS, This is a recognition of the great and paramount interest of agriculture in the direct councils of the nation which we hail as just and worthy; and,

WHEREAS, We most humbly trust that our distinguished fellow citizen, General Benjamin Harrison, President-elect, in the selection of his political family, the Cabinet officers, who are to be his confidential advisers and chosen associates in the administration of the various branches of our government may, in his wisdom, select such person for the chair of agriculture as may fairly represent this greatest of all branches of our several industries, either political or social; therefore,

Resolved, That, while it would be indelicate and presumptuous in us to assume to instruct or advise President elect Harrison further than the above and, indeed, while we have no individual name to propose or suggest for this important place, we yet feel that the importance of the matter in hand fully justifies us in the expression of sentiments herein contained.

W. H. RAGAN.

The Society adjourned until 2 o'clock P. M.

WEDNESDAY AFTERNOON SESSION.

The Society met at 2 o'clock, President Furnas in the chair.

J. C. Stevens, from the Fourth District, submitted a verbal report, as follows: "Eastern Indiana is in the front rank in the way of horticulture. Peaches were good, and an unusual fine crop of grapes. Our strawberry crop was not as good as we have had some former years, owing to late frosts and dry summer. The apple and pear crop have been most excellent. The Jersey Queen has done well in Eastern Indiana. I must not omit to mention the Faith grape, which is becoming quite popular. One vine of that variety, three years old, grown by Mr. Sedgwick, at Richmond, produced and ripened 570 bunches this year. The Brighton grape was also good. The Sharpless strawberry is a failure with me, as well as Cumberland and Mt. Vernon. We got prices for berries this year that were profitable. A great many plum trees, never known to bear before, were loaded down. I had seven or eight varieties. They were good generally throughout the country. In our district we are still alive in horticultural work, and making some advancement."

Dr. Furnas. The Sharpless don't succeed on our place, neither does the Mt. Vernon. Sandy soil seems to suit it best.

W. H. Ragan read the following paper on "Relative Growth of Foreign and Native Trees and Plants:"

COMPARATIVE GROWTH OF FOREIGN AND NATIVE TREES AND PLANTS, BY W. H. RAGAN, GREENCASTLE.

Certain peculiar characteristics belong to the people, animals and plants of the several continents and geographical subdivisions of the earth's surface. Whether these dissimilarities are due to climate or soil, or to other local causes are questions worthy of one more highly versed in the mysteries of science than is the

writer, yet such are the facts. Thus the stalwart Patagonian differs morally, physically and mentally, as well as in habits and manners, from his swarthy relatives of South Africa, or of Australia, while the native of Eastern Asia is essentially different from the European and he from the untamed tribes of North America. Likewise the animals and birds and trees and plants, although closely related in genera and species, are found to differ from each other, as they are collected from the various quarters of our globe. And these differences are not successfully overcome even by removals from the native habitat, or artificial conditions and surroundings which may be enforced by accident or design on the part of man in his efforts to obey the command to go forth and subdue the earth.

But civilized man has found, by long and patient experience, that certain animals and certain plants yield more surely and more effectually to the domesticating process—to training and culture—than do others. And this fact extends upward, throughout the whole scale of animal and vegetable life, to man himself, where exists certain docile and other wild ferocious races, upon whom the civilizing processes have widely varying results. As an illustration of this we will take the dog and his near relative, the wolf, the one an associate and companion of man, and the other as wild and ferocious as when first coming forth from the ark, after that eventful voyage which preserved only the progenitors of his race. And again, the horse and the zebra, the former everywhere the faithful, obedient, educated and even intelligent servant and companion of man, and the latter still wild and vicious, utterly refusing to yield to the restraints of domestic life.

Thus we may study the natural history of plants and animal life only to find that certain species are susceptible of culture, and what we are pleased to call improvement, while others persistently rebel against the restraints of civilization and domestication.

Those species which readily yield to man's influence, and which are susceptible of improvement and culture, and which may thus be made to contribute to his comfort and happiness, may be familiarly classed as tameable species. On these accounts they have been carried, by man, in his migrations, from one country and continent to another, until we now have and enjoy as familiar and constant companions, both domestic plants and animals drawn from every temperate climate and country of the globe. The older and, as a consequence, the more thoroughly domesticated species—I should probably say, the first known to civilized man—are of course those species brought with him, in his migrations from the old world to this comparatively newer hemisphere, whose fauna and flora were unknown, except to savages and barbarians prior to 1492.

Here, then (in America), the process of subduing wild nature is only in its infancy. Every species of America had enjoyed perfect unrestraint, following without interruption or molestation the wild sweet will of its nature for centuries after its old world cousin, if it should have one, had been brought under the dominion of man. Thus it may not be a matter of surprise to find, through a careful comparison of related species, of foreign and native origin, that there should be found to exist certain perceptible differences in natural habits, etc.

It is, therefore, to the results of some personal observations in the line of comparisons in this direction that I would now call your attention. As a result of these comparisons, it may be very clearly shown that the wild, unrestrained, natural habit of American species still manifests itself when the plant, tree or vine is placed side by side with its foreign relative. Almost, or quite without exception, as far as my observations have extended, the American species will be found, if not stronger and more vigorous, very probably a more straggling grower than its exotic relative.

A COMPARISON OF FOREIGN AND NATIVE SPECIES.

We will begin our illustration by referring to the old world grape, the *vitis vinifera* of the botanist, which has been the domestic companion of civilized man from the earliest history of the race. Like the horse, the dog, and other domestic animals, the *vitis vinifera*, from its long association, has become thoroughly subservient to man's uses and purposes. He may train it almost as he will, and yet it patiently submits, always yielding its precious treasure in the season of harvest. While it may be strong and vigorous, it is yet comparatively compact in its habits of growth, seemingly preferring to ramble near the surface of the ground rather than to mount, as will our American species, to the topmost branches and crags within its reach. Yet, again, the old world grapes may be pruned to mere stumps, as a result of its long discipline, if not of its natural tame and domestic habit, while our American grapes will utterly rebel and refuse to yield fruit, if not to live, when subject to such a rigid regime.

The American wild cherry (*Prunus coratina*) is a much bolder, straggling grower than its European congener, the domestic cherry (*Cerasus Sylvestris*), or even its more nearly allied foreign relative, the Mahaleb (*C. Mahaleb*). Our native wild plums (*Prunus Chicasa* and *P. Americana*), are each bolder and less symmetrical in their habits of growth than the European species (*P. domesticus*). The native gooseberry (*Ribes histellum*) and the native wild currant (*Ribes floridum*), are stronger and more robust in habits than are the domestic gooseberry of Europe (*R. grossularia*), or the introduced garden currant (*R. rubrum*). None of the varieties of foreign raspberries (*Rubus Iddens*) will compare, in boldness of growth and rambling habits, with our native species (*R. Strigosus* or *R. occidentalis*). The native strawberry (*Fragaria Virginiana*) unquestionably furnishes some of the most rampant growers belonging to the genus. In the genus *Pyrus* (the pear and apple) we have but few native examples for comparison. The American wild crab (*P. Coronaria*), however, while it may not be more vigorous than is *P. Malus*, the cultivated apple from Europe, it is probably, when left to themselves, less symmetrical in its form of growth.

The above practically completes the list of comparisons, so far as our fruit-bearing species of native and introduced trees, shrubs and plants may be of interest, but there is yet a large list, mainly of ornamental and useful trees, in which the same general results may be reached by investigation. Perhaps none of the introduced roses will compare with some of the native species in luxuriance of growth. None of the foreign junipers are so loose and straggling in their habits of growth

as the common red cedar (*Juniperus Virginiana*). The Lombardy poplar (*Populus dilatata*) is much more symmetrical and compact in its form and less robust in habit than either of our well known American species. When we compare the several introduced species of arborvitæ (*Thuja*) with our native species (*T. occidentalis*), we find the same general results are obtained. The American larch (*Larix Americana*, tamarack) is not stronger, but certainly less compact in its growth, than is *L. Europea*, the introduced species. *Tilia Americana*, the basswood, or linden, of our forests, differs essentially from its compact growing European cousin (*T. Europea*). The Norway Maple (*Acer platanoides*), though a vigorous, strong grower, assumes, without artificial restraint or training, a low, compact and beautiful form, very readily distinguished on these accounts from our native maples. The native ashes (*Fraxinus*) of the various species, are perhaps, without exception, more slender and taller growing trees than their European relative (*F. excelsa*). The Scotch and Austrian pines (*Pinus Sylvestris* and *P. Austriaca*) are each bold, strong growers, but yet short-jointed and compact in habits, as compared with *P. resinosa*, our northern red pine, or *P. Strobus*, the majestic white pine of Michigan and Canada. The balsam fir (*Abies balsamea*), indigenous to the northern borders of the United States, is a much more aspiring tree than the noted silver fir (*A. pectinata*) of European origin. The horse chestnut (*Aesculus hippocastanum*) is a more compact and yet a more vigorous grower than its American cousin, the buckeye (*Ae. glabra*), and the same may be said of the Norway spruce (*Abies excelsa*), when compared with the wild spruces of our Canadian forests.

I have now, doubtless, presented a sufficient number of examples to place this interesting study before your minds in such a way as to lead to further inquiry and investigation, for I have by no means exhausted the field of observation. Indeed, my own observations have been very limited, and I have only presented such comparisons as have come within my memory as I have hastily penned this article. I hope, however, in this paper, to be able to draw the attention of scientists to such peculiarities as may be found to exist, in the further investigation of the subject here introduced.

Professor J. C. Arthur, of Purdue University, was introduced and addressed the meeting as follows:

Gentlemen of the Society:

I appear before you at the request of your Secretary, and will say a few words about the experimental work in which I am engaged in lieu of a formal paper, which I have been unable to prepare for want of time. The work of the experiment station at Purdue is apportioned among the several departments—agriculture, horticulture, chemistry, dairying, veterinary, entomology, botany, etc. My own duties lie in the department of botany.

It is particularly fitting that I should present the plans of the botanical department at this time, as the work stands in intimate relation with horticulture. It is a common saying that horticulture is the refinement of agriculture. The horticulturist confines his labors to a less area of land than the agriculturist, and for equal returns must give more careful attention to its cultivation and to whatever produces variation of the profits. This concentration of effort makes him

readier to accept and apply the results of research to his own profit than is the agriculturist, with his much wider margin for waste and failure.

I will first speak of our facilities for work. Botany at the present time is nothing without the microscope. It is proper, therefore, to mention first that we are provided with a good microscopic outfit. Our principal instrument is not large or showy or specially expensive, but has been selected for its accurate adjustments and for convenience in daily use. It is an imported instrument, made by Zeiss, of Germany, and is fitted with several lenses of superior workmanship, partly American, partly German, which show the objects looked at with great distinctness.

There are four or five rooms devoted to the botanical work. The largest one is the main laboratory, which is provided with gas, water and drainage, and fitted with various kinds of appliances for the study of plants. A somewhat smaller room is devoted to the special study of germs and germ diseases, particularly such as are not associated with animal diseases, *i. e.*, those germs causing fermentation of milk, etc., the nitrification of soil, rotting of fruit, pollution of water and air, certain diseases of plants, etc. The outfit is made from designs by Dr. Koch, the renowned German bacteriologist, and has been imported from Germany. A dark room and full outfit of cameras and chemicals enable us to do our own photographic work, whether from the microscope or from large objects. A fair reference library has been provided for the department.

But I take it that it is not so much the things we have to do with as the things we are doing and propose to do that you are most interested in. The subjects which we desire to devote chief attention to, and I speak the views of my colleagues now as well as my own, are those which you and all others for whom the station has been particularly established are most interested in as connected with your work. The problems the cultivators of Indiana are most anxious to have solved are the ones we desire to take up. But some of these important questions are very difficult to answer, and after the expenditure of much time and thought we may have advanced only a little way toward their complete solution; so it must not be expected that every time we enter upon a course of research for the knowledge that can be used in securing to yourselves additional wealth or comfort that success is to follow, as day follows night. But what we can do that we shall do heartily, and we hope to have your co-operation in the matter.

The work of the botanist falls into two classes: The study of the normal activity of plants, or physiology, and the study of the diseases of plants, or pathology. The latter is an interesting and fruitful field for research. The diseases of plants are of many sorts. There are a few produced by germs similar in general form, and development to those producing fevers and many contagious diseases in men and animals. Pear blight is such a disease. There are also a vast number of what might be called spot diseases. These cause the black specks and irregular blotches of fruit and leaves, that detract from their fair appearance, and often have more to do also with the failure of a crop than is suspected by the grower. The spots are not a normal accompaniment of growth, as many suppose,

but result from the attack of minute vegetable parasites. Their course of development is often an intricate one, and owing to their minuteness, presents many difficult features, calling for long and patient study. Unfortunately, it is so hard for the untrained observer to distinguish between the various spot diseases, or between these and spots produced by insects or wounds, that he does not get full benefit from, or give full credit to the work of the botanist. I am of the opinion, however, that matters will gradually mend, and that as knowledge of these minute vegetable pests, especially among horticulturists and gardeners, becomes more general, they will be better recognized, and as a consequence be more intelligently and effectively combatted.

At present we are working upon the subject of the spotting of peaches, and expect to publish our results in a short time in the form of a bulletin. You have doubtless noticed that Indiana peaches are often disfigured with small brown spots. They occur oftenest on fruit grown on poor soil, and especially when the weather is hot. They are due to the growth of a fungus, related to the one which causes apple scab. The fungus is confined to the surface of the peach at the base of the hairs forming the down, and although it does not affect the taste of the fruit, it much interferes with its full development, and for this reason, and also on account of the disfigurement, greatly lessens the market value. The study of the subject was begun too late in the season to undertake any experiments to find a remedy or preventive, but spraying with sulphide of potassium or some other fungicide will doubtless be found upon trial to be efficacious.

The spotting and scabbing of apples is a source of shrinkage in profits much greater than usually apprehended. Among the handsome display of selected fruit in the adjoining room you will have difficulty in finding specimen apples not affected with fungous spots. Indeed, their presence is so well nigh universal that they are not always looked upon as injuries, and attempts to prevent them appearing are not often made. Yet eventually we may hope to be as successful in fighting vegetable pests as we now are in fighting insect pests.

Such are some of the subjects in vegetable pathology to be taken in hand by the experiment station and reduced to simple rules of economical practice. They are given as illustrations, selected at random; and, without detaining you with a further account, I will pass to the second class of work, that of physiology.

Probably no problems so much interest all classes of cultivators as those pertaining to the nutrition of plants. What elements of food do each particular class of plants require for profitable development; do these elements already exist in available form in the soil under cultivation; if not, which ones are to be supplied, and in what amount and form? Such are the questions propounded. Part of the experimental work which they suggest belongs properly to the chemist, and part to the botanist. If I am not mistaken, little has yet been done in determining the exact requirements of fruit culture in this regard, and the fact will not be lost sight of in planning our experiments. In elucidating the botanical side of the problem, we propose to grow field, garden and orchard crops in large pots, in such manner as to control to a large extent the conditions affecting growth. This will be done by placing the pots in greenhouses suitably arranged to control temperature, moisture, etc., and permit of study the year round. During the summer

results more nearly corresponding to open air culture can be secured by keeping the pots out of doors. In order to prevent injury from wind, rain, birds, etc., it is proposed to adopt the method pursued at some of the German stations. This consists in the use of a glass house under which the pots of plants may be placed in bad weather. For convenience in moving them, the pots are set on trucks running on rails. Several pots are devoted to each kind of plant to be tested, and by the application of potash to one, nitrogen to another, phosphoric acid to another, and so on, and with the proper combination of these to still others, and watching the resulting product, the needs of that crop are determined.

Other subjects connected with the growth of plants in health will be studied from time to time, but I need not mention them here.

DISCUSSION.

W. H. Ragan, Putnam County. There are none of the true sciences relating to horticulture that is more interesting than botany. Botany is a true science, while horticulture is an art. We have not had until recently a department in this work as we have now. No one rejoices more than I that we are to have some schooling in this direction. Dr. Arthur's work is in the line of teacher in the ordinary sense, yet has no class, but is doing work in the most practical branch of botany as more nearly related to horticulture. This work must go on for years, it is now only in its infancy. Our State is somewhat behind in this work, but we must be patient and encourage this work in every way we can.

Prof. Arthur. The question sometimes comes to us, "how does the plant get this food by which it builds up the structure and gives us fruit?" Several questions were asked this morning bearing somewhat in that direction. For instance, the strawberry plants grow with their roots near the surface of the ground; the same with the raspberry and blackberry. How can we work them without interfering with the root and cut off the plant food? And what kind of manure must be applied, and where applied to furnish this plant food? Do we want to feed the plant or enrich the soil? There are a great many things to learn in the cultivation of plants. It is profitable for us to study plants, but we can not do it successfully without microscopes and modern appliances to find how small the cells are through which this food must enter the plant, and we would be surprised that the plant received so much as far away as it is received. Sometimes the roots of plants become exhausted in their search for food. I have known of some going quite a long distance to obtain this food that is so essential to their existence.

Dr. Furnas. I think that propagation is a science. Different plants have to be propagated in different ways. One you propagate by seed, while another, the blackberry for instance, must be propagated by planting the root. We must not get confused in this matter, but must understand what we are going to propagate to be successful. I wish to take some cuttings from the sward cactus, some one tells me I must dry them for two weeks, I do so and succeed well. When I take cuttings from the rase they tell me that plan won't do, but you must put them in sand and water to propagate successfully, and so on to the end of the list. To

succeed you must know what you are handling. A man who plants a tree must know how to properly care for that tree to bring good results. My friend here has a Bellflower, the top of the tree must be raised up because it is drooping. Another has a high-top Sweeting, he treats it the same as the Bellflower and finds it won't do. So we find there are a thousand things to learn. The farmer, fruit-grower and nurseryman who don't read can't take hold of these things successfully.

A. Glenn. I am decidedly opposed to using boards for protection to apple trees. Boards are uncertain, as they are easily knocked down by the wind or otherwise, while corn will stand. The Department at Washington admonishes people to not shade trees with boards.

Dr. Furnas. How about paper?

Mr. Glenn. Heavy paper, perhaps, is good in the summer time, but corn, I think, is better. After an orchard gets old we can put in any kind of crop, the top of the tree will then protect the bodies.

Peter Rabb, Marion County. I am in favor of protection in winter. His corn will be cut at that time of year for his cattle, and his trees will have no protection then. I think he should have boards or some other protection for winter.

Mr. Glenn. I am in favor of that in winter to keep the rabbits off, but not in summer.

Mr. Hobbs. I suggest we all experiment on this the coming year, and at next meeting we will be able to come to a more definite and satisfactory conclusion in the matter, winter killing or summer killing, protection or no protection.

Mr. Glenn. I am of the opinion that the 3 o'clock sun injures trees. I have examined many trees and found many killed in the fall. It could not have been winter that did it. Where orchards are planted on the north slope they stand much better than on the south slope. There is not so much thawing and freezing, while on the south it will thaw and absorb water, and continued freezing and thawing, and the 3 o'clock sun does the work.

J. G. Kingsbury. I see Mr. Walker is here, he is having, I understand, good success with the Lucretia dewberry.

Mr. Walker, Hancock County. I did not come here to blow my horn, but to learn something. I have nothing to say about the berry, I learn more by listening.

Dr. Furnas. I went over to see Mr. Walker; he is favorably situated on a high bluff of sugar tree land fifty feet above the surrounding country, under such circumstances, with good cultivation which he gives, the Lucretia is a success. I hope Mr. Walker will tell us something about his berries. The Lucretia wants high ground to succeed well, otherwise the results would not be so favorable.

Mr. Harter. I have had very fair success with the dewberry. Some specimens were $1\frac{1}{2}$ inches long and 2 inches in circumference. They will ripen on up till frost. I usually mulch my plants.

Dr. Furnas. Do you cover these in winter?

Mr. Walker. Yes sir, I mulch with straw or cane. I have had dewberries on ground that would produce only 35 bushels of corn to the acre. I first commenced in Ohio some years ago. Last year was the first for them to fruit for me in this State. The plants were a year old, and the crop was estimated by a great many to

be one-half gallon to the plant. I picked and sold 75 bushels to the acre. The latter part of the season set in dry, and they did not do so well. I have found the Lucretia profitable, very prolific and easily grown.

Dr. Furnas. Did you say 75 bushels to the acre?

Mr. Walker. Yes sir.

Dr. Furnas. And that the first crop?

Mr. Walker. Yes sir, I cut back to stop them from putting out runners.

Dr. Furnas. You keep the ground stirred by cultivating?

Mr. Walker. The gentleman I had cultivating for me cultivated with the hoe, but I do not think he can do this and keep the weeds down successfully. We should plow early and keep the ground clear of weeds. The fruit ripens a week or ten days earlier than the blackberry. Ripens like the blackberry. The plants are in good condition this fall.

Dr. Furnas. Will you mulch?

Mr. Walker. I have them mulched now about two inches deep. In the spring I take this mulch off and put under the plant.

Secretary. There is an impression that there are two varieties, one of which does not fruit well. If there are two varieties, we would like to know it. We would like to hear from Mr. Longenecker on this subject.

Mr. Longenecker. These dewberries were first brought from Virginia, and were given to some parties about Covington, Ohio. After propagating and introducing them they found some non-bearing plants, although one seems to have been a good one. All those others were different in the leaf, which a close observer could detect. The spurious plant has a serrated leaf, very slightly scalloped, while the genuine has a serrated margin distinctly scalloped. There has been a number of plants sent out not the Lucretia plant. You want to be exceedingly careful where you get your plants. It would most likely be best to go where they have been fruited.

Mr. Frazier. I have reported them as worthless. I have but few. Four of these hills had fine fruit and others scarcely none, but I could see quite a difference in the growth of the plant and shape of leaf.

W. B. Walker, of Greenfield, read the following paper on—

THE LUCRETIA DEWBERRY.

I am glad to be able to say this branch of horticulture is increasing in our county every year. The public now begin to realize that the dewberry is perhaps one among the most wholesome of fruits. Those that have been engaged in the business a few years find it profitable and are enlarging their grounds for the cultivation of small fruits, especially berries.

During the present year we had a number of new beginners in the business, and quite a number more will engage in it the coming season. The new process of keeping the fruit, the ease of cultivation, the almost certainty of a crop and the short period of time required to grow it after setting the plants are perhaps the chief causes of the increased attention given to their production. People are gradually learning that ripe fruits are not to be regarded as merely luxuries, but

to be used as a part of our necessary food. I think it is perfectly safe to say that 100 bushels of berries are now used in this country where one bushel was used fifty years ago. My experience with the Lucretia berry commenced in 1884. Since that time it has proved a success in every particular. It has been very profitable also. It is a plant that is very easily cultivated. I set them six and seven feet apart and cultivate them principally with the plow. After the first year I cultivate but little. Just after the first year enough to keep the weeds down and loosen the soil sufficiently for propagation in the fall. In the four years we have never failed in a crop. Hence the Lucretia berry is certainly remarkable as well for great productiveness as for the very large size and excellent quality of its fruit. In size the berries average from large to very large, with but few that would be called medium or small. The fruit is very handsome, pips large, color deep, shining black, juicy, melting, with no hard core, and of best flavor. It is really one of the handsomest and best blackberries grown. For market purposes I find nothing that equals it. Its low, trailing habit will require a mulching of straw or other similar material, to keep the fruit from lying upon the ground. Its foliage healthy, thick and free from disease. Yield to the hill is from half a gallon to three quarts and upward. As to hardiness it equals the Snyder blackberry. We grow them in clay soil, but it is our opinion that they can be grown in any kind of soil, unless it would be pure sand.

Mr. Harter, Randolph County. I have but a small place, on which I have 1,500 hills of the Gregg raspberry, that averaged me something like one-half gallon to the hill last season. My Black caps amounted to about the same. I have also a few Cuthberts which done well. The Turner done no good. I have the Taylor and Snyder blackberry, a hundred of each variety, from which I picked fifteen bushels of berries last year, the first crop. They seem to be perfectly hardy, neither kind being injured by the cold last winter. Our people are fond of berries. Winchester will use five hundred bushels a year, when seven or eight years ago a few bushels would glut the market.

G. W. Grant submitted his report as Vice President from the fifth district:

FIFTH DISTRICT, G. W. GRANT, VICE PRESIDENT, PULASKI.

In my report of the fifth district, which for lack of information will necessarily be confined to our own and adjoining counties, I have the following to offer:

Our strawberries, which are the first fruit of the season, were almost a failure, partly owing to the severe drouth of '87, which prevented them from making any plants, and partly from the late frost which killed the early bloom. Of the many varieties grown here the Daniel Boone and Parry fruited the best this year.

Raspberries were a short crop, with the exception of Shaffer's Colossal, which fruited abundantly, notwithstanding the sharp drouth of the ripening season.

Blackberries are not extensively grown, and were a lighter crop than usual in this vicinity.

The Russian mulberry is beginning to attract some attention here. The fruit ranges in size from small to very small. In color it is from a light cream color to

a dark purple, and from very sweet to sprightly acid in taste. Our trees are young and grown from seed; but it is a noticeable fact that the quantity and quality of the fruit improve as the trees grow older.

Currants and gooseberries have again put in an appearance to those who have persistently waged war against the worms. Of our gooseberries, Champion, Downing and Mountain Seedling produced the best results.

Grapes, most of which are Concord, grown in this vicinity, yielded a good crop of well matured fruit. Of the many varieties not thoroughly tested here, the Worden promises to take the lead.

The cherry crop was fair. The older trees are damaged generally, and the younger ones have not commenced bearing extensively as yet. The Morello and Early Richmond are the varieties most extensively fruited in this locality. The Olivet, Louis Philip, Montmorency and others, promise well, but have not been fruited enough to thoroughly test them.

The plum has not been extensively planted until of late years. The results have been invariably reported as good. The Wild Goose is most extensively planted in this locality, but De Soto and other varieties promise equally good, if not better, results than the Wild Goose.

Peaches are a fruit of the past. Almost every farm has its remnant of peach trees, and a few people plant them yet, but there has not been a peach crop for several years.

The Russian apricots are reported as fruiting in adjoining counties, but we have no personal experience with them.

The pear is a good fruiter with us, and the trees that had vitality enough to carry them through the season matured a fair crop. Of the many varieties planted the Flemish Beauty, Sheldon and Doyenne d'Ete are the only ones which have stood the severity of the climate in Pulaski County.

The apple crop was good. Quality about medium. Cider presses report a very noticeable change in variety since '84. Such varieties as R. I. Greening, King of Tomkins County, Smith Cider, Baldwin and others of that class, entirely disappearing, while in many instances their places have been filled by seedlings.

As it seems to be in order to report success or failure with Russian apple trees, also other stock from the Experiment Stations at Ames and elsewhere, I will add my testimony. I have growing on my grounds eighteen varieties of apple; also other fruits selected and sent by Prof. Budd. The trees (apple trees) have nearly all proved slow growers. Several of the varieties have much the appearance and general habits of the Duchess, forming their terminal buds and shedding their foliage at about the same time. I believe them to be, with few exceptions, perfectly hardy in this climate. I am not fully satisfied with the pear, cherry and plum trees as handled by myself, but feel greatly encouraged and will continue propagating them, with hopes of a grand success.

DISCUSSION.

Mr. Taber. I would like to know something about the Russian apricot.

Mr. Frazier. I was at Dr. Robinson's place and saw one in bloom, and hear it made fruit.

E. Y. Teas. I have seven or eight young trees coming into bearing; they were good in quality, and the tree is hardy, but the curculio seemed to damage them.

Mr. Glenn. We have some trees in Columbus which done well.

Mr. Hobbs. We had trees to bloom last spring, but the fruit was killed by late frost.

Mr. Grant. It is a failure with us.

J. G. Kingsbury. In regard to legislative appropriation, I think it would be well to keep the apples that are on exhibition until the meeting of the Legislature, and have our committee on legislation invite the members to see the fruit this society is laboring to make more plentiful throughout the State.

Dr. Furnas. We should employ somebody to manage this. If we would do like they do in Michigan we would hire a man to have those tables well filled with fruit ready for the Legislature. That is the way they done at Philadelphia. They sent a man there to look after this; he staid there all the time, and when one variety failed he sent to Michigan and had it replaced. You should talk to your neighbors about this, and I think you will find they will do something for us.

J. G. Kingsbury. I move that our committee be instructed to have a supply of fruit on exhibition during the meeting of the General Assembly for the purpose of getting an appropriation.

Isham Sedgwick, Wayne County. I move to amend by saying a man be employed to look after that during the first two weeks of the Legislature.

J. C. Raliff. No doubt we have enough apples in this State to make a magnificent display and captivate the Legislature. We should tell them in so many words that we demand this appropriation in order to place our horticultural society on a basis with Illinois and Michigan. If this matter is carried out there is no doubt but we can get all the money we want, but let us bear in mind it will take an effort.

Mr. Grant. If we can succeed in getting a good display before the Legislature, no doubt we can get the appropriation we ask for.

Mr. Glenn. Unless we hit hard it will be a failure. If we succeed in getting a good appropriation this year we will most likely succeed in the future.

S. Johnson. I do not want this to go out as an exhibition to bribe the Legislature. I am in favor of this, that when we adjourn we adjourn to meet about the middle of January, bring our fruit with us then, and if need be keep it on hand an indefinite time, and pay a man for taking care of it.

Isham Sedgwick. I regard this work as a society of benefit to every man in the State. This society has a right to be supported by the State to the extent necessary for the printing of our proceedings and furnishing assistance in making this display to educate the people. I regard this education as I would common schools. There are many people in the country who know but little about fruit; they take

the catalogues from which they select the nicest and most glowing described variety, and every one of us know how we fail. If this society has gone to work to produce varieties, test them and show to them what is valuable to the State, then this society has a right to draw support from the State, and it is not a bribe to the Legislature, but an evidence of what this society is doing and has done. This society is working for the State and wants support, and feels that it should have it. We should bring up a nice display before them, so every member can see something of what we are doing, and I think we will get what we want. We will get it because the men will see evidence that we deserve it.

C. M. Hobbs. In presenting reasons why we should have an appropriation, one of the most important is the experimental station work we have on hands, which are located in different parts of the State. Next to this is the recommended fruit list that we have in contemplation. I am continually receiving inquiries from different parts of the State as to what varieties to plant. Those who do not make a study of this question have no idea about what is best for them to plant. They should have some source of reliable information that they can draw upon. If this society can have two of the most experienced fruit growers in each county to give a list of varieties of fruit that do well, and are most reliable in that section, and we can print these reports in our volume of transactions, we shall have a reliable guide for the inexperienced planter.

Motion adopted.

S. Johnson. Nine-tenths of the members of the Legislature know but little about horticulture, and we should meet about the middle of January and make a fruit exhibit, in order that we may properly present the matter before them. I therefore move that when we adjourn, we adjourn to meet from the middle to the last of January, for the purpose of making a fruit exhibit.

Motion carried.

J. J. W. Billingsly. It is important that this interest should be developed and save to the State a large amount of money which is expended in shipping fruit from other States. We have first of all to impress the members of the Legislature with the importance of the development of our own State. I have a resolution which I would like to read.

Reads resolution, asking for an annual appropriation of \$1,000.

Mr. Sedgwick. I move to amend by making it \$2,000 instead of \$1,000.

Adopted as amended.

The Society adjourned until 7 o'clock P. M.

WEDNESDAY EVENING SESSION.

The Society met pursuant to adjournment. President Furnas in the chair. Prof. W. C. Latta, of Purdue University, was introduced and spoke as follows:

NOTES ON EXPERIMENTS.

Mr. President and Gentlemen of the Society:

I desire to present a few thoughts and facts which are the outgrowth of field experiments at Purdue University.

COMPARATIVE VALUE OF HORSE MANURE AND COMMERCIAL FERTILIZERS IN CORN PRODUCTION.

Thus far in our experiments upon grains we have found stable manure to have more marked and lasting effects than commercial fertilizers. Experiments are still in progress to ascertain how long the yields of corn will be increased from applications of fertilizers and of manure previous to 1885. In some instances the effect of the fertilizer has already vanished while the manure continues to produce an increase in yield.

CONTINUOUS GRAIN GROWING COMPARED WITH SYSTEMATIC ROTATION OF CROPS.

On one system of plats the cropping is as follows: (1) The same crop (corn, oats, wheat on separate plats) growing year after year; (2) two grain crops grown alternately on the same ground—corn and oats on one plat, corn and wheat on another, and oats and wheat on another.

On an adjacent series of plats the crops are grown in rotation, as follows: (1) Five-course: Grass and clover first and second years, corn third and fourth years, wheat fifth year. (2) Six-course: Grass and clover two years, corn, roots, oats, wheat. (3) Seven-course: Grass and clover, two years, corn two years, beans, oats, wheat.

This experiment was begun in 1880, at which time the two series of plats appeared to be identical as to character of soil and degree of fertility. No manure has been used on either series since 1879, and probably none was applied for several years previous to that date.

The yields of corn, oats and wheat for 1888 on both series are shown below.

YIELDS FROM ROTATION CROPPING AND CONTINUOUS GRAIN GROWING WITHOUT MANURES.

SYSTEM OF CROPPING.	BUSHEL PER ACRE.		
	CORN.	OATS.	WHEAT.
Grain and forage crops in rotation	41.05	21.75	11.73
Grain crops grown continuously.	31.41	19.55	1.66
Difference in favor of rotation cropping	9.64	2.20	10.07

The yields are not large; they could not be on worn land without any manuring. Besides, 1888 was a bad year for wheat and oats. The significant feature of the table is the *difference* in favor of the rotation system.

It would be well to bear in mind that this difference is the result of only eight years cropping and that it must become greater as the years pass. The light yields of even the rotation plats show that rotation should not be substituted for, but a supplement to manures.

INFLUENCE OF CLIMATE.

Climate is the controlling factor in crop production. A severe drouth will sometimes almost completely neutralize the effects of manure. For example: in 1887—when a protracted drouth occurred—plats dressed with fresh horse manure three years before, yielded only about two bushels per acre more than unmanured plats. However these same manured plats in 1886 produced about nineteen bushels, and in 1888 about nine bushels more per acre than the adjacent unmanured plats. The above is only one of many cases that might be cited to show the overshadowing influence of climate.

INFLUENCE OF SOILS.

The influence of soils is, perhaps, second only to that of climate. The soil affects not only the yield, but also, the character of the growth. More than this, the same soil affects different varieties in different ways. This has been repeatedly observed among wheats grown on the college farm and elsewhere.

The selection of

VARIETIES ADAPTED TO SOIL AND CLIMATE,

Therefore, becomes an important consideration. I am fully convinced, from experiments with the grain crops, that judicious selection of seeds with reference to soil and climatic conditions would increase the aggregate annual yield of Indiana's great staples many thousands of bushels. When a prolific hardy variety, suited to local conditions is obtained, its standard of excellence and purity should be maintained with sedulous care. No doubt many are ready to ask the question, "Can this be done?"

"DO NOT VARIETIES RUN OUT?"

Is a question often asked, and answered affirmatively. With reference to wheat, oats and corn at least, I answer, unhesitatingly, no, they will not run out if properly cared for. This theory is simply a very convenient and ingenious subterfuge to screen the farmer's indifference and lack of skill in caring for his crops. Propagators of new varieties, eager to bring out something "new under the sun," may help to popularize the above theory, but farmers are chiefly responsible for the prevalence of the notion that varieties run out. Plants, like animals, are plastic—susceptible to modification "for better, for worse," according as surrounding conditions are good or bad. The same care and attention that are bestowed to effect an improvement will maintain the same when secured. The proof of this is seen in the many standard sorts of corn, wheat and oats, which maintain their excellence though they have been in general use for many years. The simple lesson that farmers would do well to learn and apply, is that they can produce seeds of high quality year after year without deterioration. I do not mean by this that we can produce Colorado wheat or Norway oats to perfection in Indiana. I do mean, however, that the farmer can produce as good wheat, oats, corn, etc., as his climate and soil will permit; and that these seeds, produced at home, will have the highest adaptation to the local conditions under which they have been grown. Of course

it will not do for the farmer to settle down to the conviction that he has the best possible thing. That is anti-progression. He should continue to try the new varieties as they come out, but judiciously, sparingly. He should persistently and intelligently strive to maintain the excellence of the old and tried sorts, and steadfastly "hold fast that which is good" until he has proved something else to be better.

Dr. Furnas. If those varieties are not running out, there must be some cause for their failure in bearing. There are men in this room over fifty years of age who maintain that the Bellflower, Vandevere, Pippin and White Winter Pearmain are not what they used to be. I think this is a conceded fact, If it is some kind of trouble on the surface, is there a remedy? This presents itself in a number of ways. Have we been starving our trees?

Dr. T. V. Gifford. This subject was up once before the Horticultural society of Howard County. Having occupied my mind considerable in studying the various laws of production, I find this subject very close to the question of hereditary influence in the generation of animals and man, and will only give a thought or two as to my conclusions. There are two distinct ways in which we propagate plants. One is direct extension of the already started branch of the vine or plant, the other is from the seed direct. In the plant, as the strawberry or grapevine, there is an extension of the same individual plant, while in the propagation of the grain plant we have each year a new plant creature formed from the grain, while necessarily there must be a continual running out of those varieties propagated by extension. To illustrate, we take a cutting off a grapevine, the nearer the root the more vigorous will be the growth, while as you propagate farther away you find it weaker and weaker. So it is with the Bellflower apple. If it is little and indifferent it is because it is distant from the seed; but when you grow from the seed there is a new creature, and that creature is developed according to circumstances that surround the plant, when the falling of the pollen takes place.

Mr. Franklin Taylor, Indianapolis. Some sixty years ago I was living with my father on a farm near Philadelphia. He had an orchard of 110 trees; for four or five years we never collected less than 80 cart loads of fruit off these trees. Since that time many horticulturists in that section have been doing all they could in the way of propagating seedlings, and to-day in all that eastern country you can not find 110 trees that will yield forty cart loads of fruit. If we are really deteriorating I want to know it, either in quantity or quality.

Prof. Latta. I hesitate to say much on that side except in a general way, I will say, however, that I have no doubt there has been some changes in climatic condition, and in the condition of the soil and prevailing method of tillage, our land is getting poor. You can't get perfect grain or fruit unless you have perfect conditions, which goes far toward answering this question. I believe if we seek to find out those conditions and maintain them, we shall get good results as farmers, but we ought not to expect from the same tree the same results we obtained thirty or forty years ago; the trees are getting old. Some of you are growing old and can not do as much work as you did twenty-five years ago. I would ask if young trees fail as old ones?

E. Y. Teas. We have nice apples this year. We have fine Vandevere Pippins and Bellflowers. There is one Vandevere Pippin tree fifty years old from which there has been picked as nice fruit this year as I ever saw. There is no question but what apple trees will deteriorate with age, and fail to bear where the soil becomes exhausted. If good trees are properly cultivated, I believe they will bear fruit as well as they ever did. So with grain, if the farmer will select each year the best developed and most perfect seed, he will improve the grain all the time. I don't believe that grain will run out, but our failure in raising good specimens and good crops is the result of the slipshod manner in which we cultivate our land.

Dr. Furnas. Do you believe the old Wilson strawberry if put out on new ground would produce crops like it used to?

Mr. Teas. I have not grown it for years; I do not know.

Mr. Longenecker. I have bought Wilsons where they were doing well and planted on my ground, and when they got in condition to bear did not produce well. I have grown them along with others, and others would produce three or four times as much. Raspberries we find sometimes appear to run out. The Souheagan, I think, shows signs of running out. Whether the various varieties run out from climatic influences or diseases to which they are subject, we can not say, but that many varieties do not yield as they once did, is evident.

Mr. Stevens. I enter my protest against the different varieties of fruit and grain running out. Mr. J. D. Hampton, one of the most practical fruit growers of this country, told us that the climatic condition this year would be such that we would have apples, and you gentlemen who visited his orchard last July, must say that he was correct. Mr. Hampton rarely fails to have apples. Some of you know that my father was a successful potato grower, and could produce a type of potato just to suit his fancy. He selected just such tubers for seed as he wanted his next crop to be. He made it a hobby to produce such large potatoes that they were unfit to eat. I have been growing wheat and find that I can handle wheat with as much impunity as I can my cattle. I raised corn on my place some years ago so high I could scarcely reach the ears. I commenced selecting ears near to the ground, I kept it up for eighteen years, and now produce ears within four feet of the ground. I don't believe in this running out, we must replace the soil, there is where the trouble lies. I believe in feeding, you can't make a good cow give good milk and butter, without feed. It is the same way with the Wilson Albany strawberry.

Mr. Glenn. In the early planting of orchards they cultivated their trees. It is different now. Our trees are too much neglected. A man will set his fruit trees in the fence corner and pay little or no attention to them. From the want of culture 90 per cent fail to grow at all. The second reason is climatic conditions. In the early history of the country you had the influence of forest and stream which are gone. The forest served as a brake to keep off the cold waves coming down upon us, as now. I have no doubt but we have quick sudden changes now producing a temperature which injures trees, but the principal cause of failure is lack of culture.

S. Johnson. I believe those young men are right. I have no *doubt* but they are right. We must feed with manure. Some of you will remember, our chairman, a few years ago, speaking of my place at Irvington that it would not raise mullein stalks. For the last ten years I have taken the premium on mangles, carrots and turnips. My garden is near the stable and I fertilize heavily each year. I spread manure on the ground until it is covered. Those old orchards might bear again if manured. You turn sheep and cattle in the orchard and you take away from the orchard and never give back any thing. We must get the soil back in the original condition as nearly as possible.

Mr. Harter. The soil has something to do with it. I have a patch from which I picked this year as fine berries as I ever picked and there has not been a load of manure applied for seven years.

Pres. Furnas. The first farm I owned was 120 feet long and 60 feet wide. I manured that ground until the potato plant grew eight feet long. Here I furnished one kind of material too much for another. Can I supply the same element that I took away? It is perhaps the same with the Bellflower, if we feed, it may come up better. This matter of fruits and grains running out is a vital question and should be looked after by Purdue.

Mr. Stevens. As to manuring your potatoes you overdone the matter. My father once procured some blackberry plants of Nicholas Longworth. He had us boys to haul manure from the barn with which to prepare the ground, and the result, those blackberries were a total failure. So after corn was husked in the fall he sent us boys in the woods to haul up leaves and rotten chunks; we hauled until we covered the ground over; he plowed up and set out to blackberries again and have had berries ever since.

Mr. Glenn. We find in Michigan there is an ameliorating influence of moisture which is good for fruit.

J. J. W. Billingsly. The saying of Emerson is correct: "There are farms underneath our farms that we know not of." They have been drawing from the under farm this year. The moisture during an extreme drouth comes upward through the soil by capillary attraction bringing elements of fertility with it. It has affected the orchards and all growth in the country, except wheat which was damaged by surface freezing last winter. Drouth brings practical lessons if we heed them. We have been robbing the soil for forty or fifty years without returning any thing. We have got to go down to the lower farm or improve the upper farm.

Mr. Sedgwick. We have a large number of ideas advanced. We have been benefited by what we have heard. As to the various crops, we should select our seed with care. I once made an experiment in the field. While gathering corn, I found an ear different from any other. It was of good size. I thought I would take that ear and produce a new race of corn. I planted it, and had a magnificent growth of stalk, tassel and cob, but on the cob not one ear in the lot was one-half filled. I was at a loss at first, to account for it, but this ear was not mixed with others, and not properly fertilized. Next year I took some of the grains of the same cob, and planted with other corn and had good corn. So we see we have much to learn in the way of propagating grain and fruits. We are only in the A,

B, C of horticulture. Some of you have been experimenting on different varieties of apples. Some producing well, yet make a shorter growth, while others spread more freely, and do not bear so well, but possibly larger apples. We must feed our soil if we expect good returns. In the early settlement of this country there was a virgin soil, and did not require manure, but for years we have been taking away from that soil, and it may take years and years to replace it. In Old England, where they have manured for centuries, they have splendid crops. When we begin to find out that it is necessary to feed the soil, we will find results much larger, and we will feed all the time. We must feed regular. It is not possible to renew an orchard in one, or even five years. I picked apples from a tree this year that was seventy or eighty years old. They were as good as thirty-five years ago. That tree grew down in a little valley, and the wash around the roots kept it in good condition. The sprouts are thrifty and still bearing good fruit, while the top is somewhat dead now.

Dr. Gifford. We have found that the Wilson-Albany has run out. Is not the same thing true with the old Meshannock potato? Are we now raising the great grandchildren of these varieties better than the parent? Here we have two old parent stocks, one propagated from the vine and the other from the tuber. Everything that is brought into existence, either animal or plant, has a positive power that can be increased. The Wilson-Albany strawberry is the father and mother of the rest and has lived its time out.

Mr. Longenecker. Prof. Latta in his remarks spoke in reference to fertilizing with stable manure. At any time did you find any injurious effect? Does it heat or burn vegetation?

Prof. Latta. I have not observed any injurious effects. We get results somewhat in favor of stable manure as against commercial fertilizers. A heavy application of manure will perhaps be somewhat injurious in a dry season. Our soil is a heavy compact soil. Perhaps the results would not be the same on other soils.

Mr. Langstaff, on behalf of the Florists of Indianapolis. I was informed that you were in session, and we have come in to confer with you in regard to the erection of a suitable hall for the floral and horticultural exhibit at the State Fair. As far as horticulture is concerned, I think myself the floral and horticultural display should be put together. It would look better, and would be a place more convenient and suitable than in a crowded, dusty room. Heretofore the place has been in such condition that it was not fit to put plants in. The people crowd in, dust falls on the flowers and plants, whereas, if you have a room especially for them and kept damp, flowers would keep much longer and appear much better, and we are here to consider the propriety of building a room of that kind. It would cost but a trifle. We have beautiful fair grounds, and the influence of our fairs is not only felt in Indiana but all over the United States. Our State Fair Association, while it has a good name, we should have something to give a better name in the future. Money could not be spent better than appropriating a small amount for that purpose. A plan could be gotten up on which a building could be erected, giving the horticulturists one side and the florists the other. Let it be understood that we have a good hall, and I believe the display will increase not only this year but every year.

People will be glad to go there and look over the plants, flowers and fruits. I am favorable to these exhibitions. By them we interest and educate the people and improve our methods. To secure these results we must agitate the question in that connection that will produce the best effect. We do this as florists not only of the city but of the State. We bring the products of our labor there that we may compare and learn from each other. We florists and horticulturists are educators of the people. The great mass of the people are looking to us for the future. If we sit still the coming generation will not receive much at our hands. Our suggestion would be that you gentlemen appoint a committee to meet a similar committee of the florists to agitate this question. Let them talk the matter over, prepare specifications and ascertain price of building, and report next year.

Mr. Sedgwick. I like the suggestion of our florist friends. I suggest the appointment of a committee of three to confer with the committee of their association. I therefore move that a committee of that kind be appointed.

Mr. Langstaff. If we had a good building we would have larger and better exhibitions. As it is there are but few who make exhibits, and they mostly in this city. If we had a place as we are thinking of, we would have all the space occupied.

Motion carried, and W. H. Ragan, C. M. Hobbs and Isham Sedgwick were appointed a committee to confer with a like committee from the florists in the matter of erecting horticultural and floral hall on State Fair grounds.

The following committee on seedling apples was appointed: A. Glenn, J. C. Ratliff and Prof. Troop.

Adjourned to 9 o'clock to-morrow morning.

THURSDAY MORNING SESSION.

President Furnas called the meeting to order at 9 o'clock.

Mr. Lawrence offered the following resolution regarding the holding of Institutes as proposed by the State Board of Agriculture, which was adopted:

WHEREAS, Quite a number of Farmers' Institutes were held in several counties in this State last winter; and,

WHEREAS, R. M. Lockhart, Superintendent of the same, has appointed one for this winter, and is in correspondence with speakers for other counties; therefore, be it

Resolved, That we, the members of this society, pledge ourselves to give these Institutes our hearty support when appointed for our vicinity.

The Secretary read the report of Dr. Connett from the second district.

REPORT FROM THE SECOND DISTRICT, DR. C. CONNETT, VICE PRESIDENT, MADISON.

So far as I know there is not a local Horticultural Society in the sixteen counties included in the second district, to whose officers I could refer for information relative to the fruits of this region or the fruit crop of this year. I only know by general report that it has been a bountiful year throughout the district, both in

cereals and fruits, and I have thought quite often of the prediction of Dr. Furnas at the last annual meeting, that we should have a good fruit year. Of my own county(Jefferson) I can speak more particularly.

STRAWBERRIES.

The strawberry crop was not good. It promised splendidly, but the very dry weather of June injured it seriously and the crop was much below an average. The Crescent is decidedly in the lead as a market berry, on account of its great productiveness. Sharpless, Miner's Prolific, Wilson's Albany, Longfellow, Kentucky, Cumberland, and others grown to a limited extent. I am unable to report on any of the newer varieties.

Red raspberries were almost a failure, the plants having been seriously injured by last year's drouth. The Turner and Cuthbert are the principal varieties grown. The crop of Black Caps was fine, the Gregg being the leading variety. My neighbor, Mr. Ezra Wood, has a seedling Black Cap which he has tested for several years, and which I think will be worthy of propagation. It is about as early as the Doolittle and as large as the Gregg, sweet and very productive.

The crop of cherries was enormous, the Early Richmond and the Morello being the leading varieties.

Wild blackberries of fine quality are found in such abundance in this county that but little attention has been given to the cultivation of that fruit, and such efforts as have been made have failed on account of the rust. The Snyder, however, seems to be rust proof, and it is now being grown to some extent.

PLUMS.

This county was formerly celebrated for its plums, the "Big Blue Damson" being extensively grown, but of late years growers have become discouraged by repeated failures, and many orchards have been cut down. One neighborhood shipped this season, plums to the value of \$2,200, showing that the interest in the crop is not all dead. The "Big Blue Damson," the "Little Damson," and the Wild Goose are the only varieties grown for market.

PEACHES.

Late in July, in company with Mr. M. C. Garber, of the Madison Courier, I visited the peach orchards of Argus Dean & Sons, in Clark and Jefferson counties. They also own extensive orchards in Trimble County, Kentucky, just across the Ohio River. This is probably the largest peach-growing enterprise in the world. They now have 125,000 trees, covering 775 acres of ground, and of these, 75,000 were full of peaches this year.

These orchards are situated on high ground near the bluffs of the Ohio River, and, although the soil is too poor to grow good crops of grain, the peaches are superior in size and flavor, and always command the highest price. One reason why this last is the case is that the name of Mr. Dean, whether on a crate or a can (for they put large quantities of fruit in cans) is a guarantee of excellence.

The trees are planted one rod apart, usually with a crop of corn, and are carefully cultivated from that time on, whether bearing or not.

Mr. Dean planted apple trees at suitable distances apart in his fruit orchards, and now has extensive apple orchards where the peach trees are gone.

The fruit is lowered to the river on inclined tramways, shipped by boat to Cincinnati and Louisville, and re-shipped at the latter point to Indianapolis and Chicago.

The crop this year was in the neighborhood of 50,000 bushels—double what they anticipated at the time of our visit.

The varieties cultivated are the staple sorts, to be found in our nursery catalogues.

In Trimble County, Kentucky, there are many peach orchards running from 100 to 10,000 trees, and the crop of that county this year was probably not less than 50,000 bushels.

Our peach growers do not expect a crop every year; in fact, it is better for the trees not to bear every year, and it occasionally happens that they miss several crops in succession, but they hold that peach growing pays, even then, better than ordinary farming, especially on this poor land.

PEARS

Are but little grown in this region for market. The crop was abundant this season and I have heard but little complaint of the "blight" for several years.

APPLES.

The apple crop is the largest and best in quality that we have had for years. I tried London Purple in my orchard, as directed by those who have experimented with it. I have beautiful apples, but so have my neighbors who did not use any preventive, and further experiments will be necessary to enable me to reach satisfactory conclusions on the subject.

GRAPES.

Prior to the discovery of the fact that paper sacks would save our grapes, I had about given up growing them except a few on walls. The mildew and rot, the birds and the bees, were too many for me. It is true I could grow Ive's seedling on a trellis, but they were poor things when I got them. Now, with cheap paper sacks and cheap pins, I grow any varieties I choose, with a fair prospect of success, and there is no good reason why we should not all have grapes in abundance. There seems to be but one necessary condition, and that is to put on the sacks soon enough. The Creveling is the best early grape I have ever grown. It is rather tender and the cluster is not compact, but by throwing it down on the ground in the fall and protecting slightly, it comes through allright, and having eaten the fruit once, you will always grow it.

I have been much pleased with the Brighton so far, and believe it is destined to take an important place on the list, both for home use and market. It was fairly ripe here, August 20.

There are ten times more Concords grown than all other varieties put together, and it will probably be long before it is superceded.

There are no large vineyards in this end of the State.

DISCUSSION.

C. M. Hobbs. We should have some definite arrangements for getting up and maintaining the proposed display of fruit during the session of the Legislature. To make it a success we must have some money, and somebody whose business it shall be to see that it is a success. We should have a pledge from those present to contribute to this exhibition. We must have fruits, and many of the varieties at that time will be gone. This matter should be carefully considered and definite arrangement made by which this work can be successfully done.

S. Johnson. The principal expense will be the express charges. I think apples will be donated. It will require some one in the room to have constant care of the fruit, and see that every thing is in shape. I have little or no doubt but that we will get the appropriation.

Dr. Furnas. Passing this resolution means work for somebody. The apples remaining in a warm room any length of time, I think, will spoil in a great measure. Unless we can do this in good earnest it is not worth while to do any thing at all. When the new Legislature convenes the members will be busy and can not look to it for a while at all. You want a man to care for the apples who knows how to talk and explain the merits of the fruit. I am not willing to take stock in this exhibition unless we do this. Indiana has always done just enough to get beaten. I wish we could reconsider this motion. I am willing to do what is necessary, but if we can't get up a creditable show I would rather not do anything. It is now six weeks until the meeting of the Legislature, and these specimens will spoil before that time, and to undertake to duplicate them we can not do it, as people have their apples stored away in their cellars, and we can not get as good specimens.

J. C. Stevens. It seems to me we have acted prematurely in this matter. The most serious lack is, the fruit has not been properly handled for that kind of an exhibition, and we are out of fruit; it will take money to make this apple show. If you want to make a creditable show there should have been a committee appointed last August, whose business it should have been to collect and classify these apples. Indiana is liberal and patriotic, and this show implies that some of us must come up here and stand guard and work. Is the enthusiasm high enough to do this? Are we ready to go down in our pockets and raise the necessary money? I would rather not undertake it unless we are sure of success. If we come here with our tables not well filled we will fail. It is due to our credit that we should reconsider this question and go before the people with our plan, go to their houses, sit by their fireside and talk this matter over. I suggest that we reconsider.

Mr. Johnson. I think, if we go before them properly, we will get an appropriation. I have had much experience with legislators. They will ask us all manner of questions about what us horticulturists are doing, and we want to let them know.

Mr. Billingsly. We will accomplish about as much if the committee appointed to see to this matter would lay plans and facts before them in regard to the value of this industry to the State. The amount paid out for fruits grown in other States which we might grow in our own is immense. If we can ascertain in the way of statistics what we might grow of horticultural products in our own State, and the value of these products, and show the magnitude of this industry, and present in condensed form to every legislator, and do it intelligently, I have no fear of the result. I therefore move a reconsideration of the resolution. Carried.

The Secretary. I indorse the views of Mr. Billingsly, and suggest that we appoint a committee to prepare statistics and get together such other facts as relate to this matter, putting them in as condensed a form as possible, and in such a way as will appeal to the intelligence and best judgment of the legislator.

Mr. Johnson. I believe in the suggestion of Mr. Billingsly, if that can be carried out.

Mr. Billingsly. Would it not be best to put this in a condensed form in printed sheets and put it before the legislators in that way?

J. G. Kingsbury. Let us pass the original resolution and also the amendment. The committee we have appointed on this are intelligent men, and could interest the members of the Legislature on this subject. You may send them circulars and the chances are they will not read them, but seeing the fruit here they would be reminded every day of our purpose and request. We are only a part of the Society. Many have gone home, and it would not be right to change this.

Mr. Workman. I have not had an opportunity to speak on this question. I want to second what Mr. Kingsbury said. Why not have both? I think Mr. Stevens' idea is correct. We should have prepared for this before now. Some of our apples, perhaps, are not in good shape, but it seems to me that all apples sound now would be for two weeks. We can replenish the tables. I am in favor of the original motion.

Secretary. The practical way to get at this matter is to know how many here will pledge themselves to furnish fruit for the exhibit. If we can furnish fruit to make it creditable, then we can go ahead.

The members were asked to hold up their hands who would contribute to the exhibit. The majority present responded.

A vote was taken as to the advisability of undertaking the holding of an exhibition as proposed, which was unanimous in favor of making the effort.

On motion of S. Johnson, J. J. W. Billingsly, Hon. I. D. G. Nelson and C. M. Hobbs were appointed a Committee on Statistics.

Mr. Billingsly. I received this morning a communication from W. H. Morrison, of Wisconsin, where they are holding very successful Farmers' Institutes. He suggests that the Seed Department of the Agricultural Department at Washington be dispensed with and the money appropriated to holding Institutes in the

Congressional Districts in the United States. I want this Society to consider that question.

Mr. Hobbs. There has been no one appointed to have special care of this fruit display. I think it should be done now.

The Chair appointed Sylvester Johnson, W. H. Lawrence and William Bertermann as such committee.

R. M. Lockhart, Superintendent of the State Fair and member of the State Board of Agriculture, being present, said: "I had hoped to be with you in this meeting, but I have been so situated I could not get here. I am sorry to have to say in our part of the State our apple crop, though quite large, is very imperfect. The amount of apples we have had in northern Indiana, not one bushel has been shipped from Waterloo, while other years many car-loads have been shipped. I have many, but so imperfect I can not do much, yet I can make quite a little collection of good fruit. I will say, if you aim to make an exhibit, I will send you two or three barrels for that purpose.

Mr. Billingsly offered the following resolution relative to holding Farmers' Institutes, which was adopted:

Resolved, That it is the sense of this society that the money heretofore expended by the Department of Agriculture at Washington in the purchase and distribution of seeds, plants, etc., would contribute more to the advancement of agriculture of the country by being expended in holding, annually, one or more Agricultural Institutes in each congressional district in the United States, under the supervision of State Superintendents.

On motion of Mr. Johnson J. G. Kingsbury was appointed a delegate to the Ohio society.

R. M. Lockhart, Dekalb County. I was selected by the State Board to take in hand the matter of holding institutes. I held seven institutes in our part of the State, receiving help from Purdue University, also, from Mr. Kingsbury, Mr. Billingsly and others. I have a number of applications in my pocket now to hold institutes in other counties. It will be impossible to hold these every where asked for until we get help from the Legislature. We will have to have some money for this purpose. We have a grand meeting to be held at Anderson on the 19th and 20th of this month. Your fruit exhibit will be in January and it would be a good thing if an institute could be held in connection with it. I have information from some friends who want to know if an institute can be held in Marion County.

The following officers were elected for the ensuing year:

President, Dr. A. Furnas, Danville.

Secretary, C. M. Hobbs, Bridgeport.

Treasurer, Daniel Cox, Cartersburg.

VICE PRESIDENTS.

Fourth District. First Vice President, J. C. Stevens, Centerville.

First District. Joseph A. Burton.

Second District. A Glenn, Columbus.

Third District. W. A. Workman, Greencastle.

Fifth District. G. W. Grant, Pulaski.

Sixth District. I. D. G. Nelson, Fort Wayne.

EX-COMMITTEE.

J. J. W. Billingsly, Indianapolis.

L. B. Custer, Logansport.

W. H. Ragan, Greencastle.

Dr. A. Furnas, C. M. Hobbs and Prof. Troop were appointed an *ad interim* committee with instructions to select a place for holding a summer meeting.

On motion of Mr. Johnson the 15th of January was the date set for the opening of the fruit exhibit in the horticultural room in the State House.

A. Glenn, of the Committee on Resolutions, submitted the following report, which was adopted :

FINAL RESOLUTIONS,

We, your Committee on Final Resolutions, beg leave to submit the following :

WHEREAS, The success, pleasure and profit of the present session of the Indiana Horticultural society is largely due to favors extended and assistance received from various sources; therefore, be it

Resolved, That the thanks of this society is due and hereby tendered the various railroads and hotels that have accommodated our members at reduced rates, to the representatives of the press of the city and the several horticultural and agricultural journals here represented, for their report of the proceedings of this meeting.

Resolved, That to the officers of this society we acknowledge our obligations for their laborious and faithful endeavors to advance the interests of horticulture. And,

WHEREAS, Our esteemed co-worker, Mr. J. C. Ratliff, who has so long and faithfully performed his duty as the representative of this society on the Board of Trustees of Purdue University, and whereas his connection with the Board has now terminated; therefore, be it

Resolved, That we are deeply sensible of the valuable services of Mr. Ratliff, and that we hereby tender him our most sincere and grateful thanks for his long, patient, earnest and efficient services. And,

WHEREAS, The credit for the pleasant manner with which these two rooms have been dressed with floral decorations (without money and without price) for the use of this society, belongs largely to one firm of energetic and clever florists in Indianapolis; therefore, be it

Resolved, That we, as a society, hereby tender to Berterman Bros. our sincere thanks for the interest they have taken in our welfare. To Mr. Lloyd, also, for beautiful floral tributes we acknowledge our indebtedness and return thanks. Likewise to the ladies, whose presence has added so much to the interest of the meetings, we extend cordial greeting now, and hope that they may annually favor us with their attendance.

Respectfully submitted,

F. BEELER,

L. B. CUSTER,

A. GLENN,

Committee.

The fruit display was very creditable, amounting to 300 plates. Nearly all the common varieties and many new and unnamed sorts were on the tables. The room was suitably decorated with evergreens, plants and festoons of Lycopodium, and the general effect of the exhibit was very pleasing. A competent committee was appointed to report on the exhibit, but the work was deferred until the last day, when in the rush of business there was not time to make a full report. We would like to give the names of all the exhibitors and the varieties they exhibited, but it can't be done now.

REPORT OF COMMITTEE ON NOMENCLATURE.

The following is a list of new varieties found on the tables:

Ephraim Hodges, a good sized apple of fair quality, said to be a good bearer. Also, an apple rather large, oblong, striped on yellow ground, mild sub-acid, yellow flesh, good. Local name "Butter," which name the committee is willing to let it retain.

S. H. Frasier, a Hendricks County Seedling, medium sized, yellow, oblong, sweet and good, prolific and hardy. Osborn's Sweet is its local name.

H. C. Rattliff, a fair sized fine looking apple, nearly red, yellow flesh, quality very good, known in the southern part of the State as the Spy Wine.

D. W. Ronk, a large, red, showy apple, supposed to be a seedling of Vandever Pippin, but of better quality. Local name "Ronk."

In the Monroe County collection we found a medium sized oblong red apple, of fair quality. In the absence of any information we did not give it a name.

Daniel Bulla, a rather large, very conical, yellow apple, with a deep open cavity, of medium quality. We suggest the name of "Bulla."

Leander Elston, a large, sweet, showy apple, yellow, with blushed cheek, of good quality, and a good bearer. The committee named it "Elston."

We found on the tables a number of varieties incorrectly labeled—some labeled "No Name," which were old varieties, which we corrected.

W. H. RAGAN,
DR. ROBINSON,
J. C. RATTLIFF,
I. D. G. NELSON,
Committee.

On motion the Society adjourned.

Vice Presidents' reports not read at the annual meeting:

REPORT FROM THE SIXTH DISTRICT.

[I. D. G. Nelson, Vice President, Fort Wayne.]

Apple crop full average in most of the counties in my district, and a full half crop in the balance. Prices low. Bitter rot damaged the crop in some localities, prominently the Baldwin, which is always the greatest sufferer from that cause.

As usual there was a fair crop of pears, but not an excessive one.

Grapes abundant and fine. Prices do not justify extensive vineyard culture, but every farmer and town lot owner has a few Concord vines, and some raise a considerable quantity for market.

A partial failure of the fruit crop for two or three successive seasons was disheartening to horticulturists for a time, but they are rapidly recovering from it, and that interest is now decidedly on the up grade in this district.

All small fruits did well the past season, but the Concord grape is the boss.

I. D. G. NELSON.

VICE PRESIDENT'S REPORT FOR THIRD DISTRICT.

[W. A. Workman, Greencastle.]

It is a pleasant task to make a horticultural report for such a season as the past, since such wonderful success has crowned the efforts of fruit growers.

I believe I can safely assert that, in my district at least, the summer of 1888 has produced more good, perfect fruit of more kinds than any other summer of the fifteen I have spent in this good State. Apples are very abundant. Even old, neglected orchards seem to have renewed their youth and were bending under their load of fine apples.

Farmers who have talked and acted as though they could buy fruit cheaper than they could raise it are now encouraged to buy trees. I have met very many this fall who are actually putting out orchards or expect to in the near future.

The varieties of apples that are bearing this season are only limited by the varieties growing that are old enough to bear. In this regard this has not been a good year to determine what kind to plant.

The winter apples seen in nearly every orchard in my district are Ben Davis, Wine Sap, Janet, Clayton, Jersey Black, Little Romanite and Rome Beauty, and those seen in fewer orchards are Vandeveres, Bellflowers, Hoops, Tulpehockens, Roman Stems, Starks, Baldwins, etc.

Though it may be a little out of place I want to call attention to one new fall apple that came to hand this fall. The *Spy Wine*, shown at the State Fair by Calvin Fletcher, of Spencer, it seems to me, is well worthy of a place among our other desirable apples.

Peaches are usually a failure in my locality, but last year we had a small crop and this year as big a crop as it was possible for the trees we had to bear up. However, it was not so all over the district, as the northern part of Putnam County was about as far north as peaches were found. I found none in Montgomery and Tippecanoe Counties.

Plums were very abundant, especially in Putnam County (the home of the Robinson), but it was not the Robinson alone that bore this year, but nearly every kind that was planted.

Small fruits of nearly all kinds did well with us this year. Strawberries, however, were considerably damaged in some fields by late frosts. Prices for berries ranged very low. I saw more currants and gooseberries than common, though most of the bushes have been dug up of late years because of the pestiferous currant worms. People who used to think it took a professional to grow berries seem to have changed their minds, and a general revival of berry planting is the result. Grapes were a big crop.

LOCAL SOCIETIES.

Within the past year President Furnas has assisted in organizing three promising local societies in the counties of Monroe, Hancock and Lawrence. We trust the good work may go on the coming year. These societies are of immense value to the localities where the meetings are held. The State Society wishes in every way it can to encourage their organization until every county in the State has such a society.

SECRETARY.

REPORTS FROM LOCAL SOCIETIES.

WAYNE COUNTY AGRICULTURAL AND HORTICULTURAL REPORTS FOR 1888.

In many ways this has been one of the most prosperous years the Society has known.

MEMBERSHIP AND ATTENDANCE.

The membership is the largest ever known since the organization of the Society. Although the weather has often been inclement at the time of holding the meetings, the attendance has always been good; many members and visitors present who take part in the discussions of the essays read at each meeting.

PAPERS.

Besides these special essays, often the standing committees present written reports on the condition of crops, ground, fruit, etc., from month to month.

AGRICULTURAL.

The first part of the season this year the weather was dry enough to enable everybody to keep down weeds so that they were not troublesome. Later, the unusually rainy season came on and there seemed to be nothing to interfere with the growth of corn, and Wayne County never before produced finer, larger ears of corn in such great quantities as in 1888.

CORN.

However, the rainy season continued during the fall, and, in a few places heard from, caused the corn to be soft, and, where it was on the ground, to rot. There has also been some trouble gathering corn from off wheat ground without injury to the wheat, but the recent freeze has made amends for that.

GRASS.

Grass was not nearly so heavy as last year. Clover was largely killed by being heaved up.

WHEAT.

Wheat was less than 50 per cent. of a good crop, and in some places scarcely paid for threshing, while in others it was fairly good.

OATS.

Oats made a short crop of poor quality.

POTATOES.

Some very fine specimens of potatoes have been brought to the Society, but the average crop is not large.

STOCK.

There has been some hog cholera south of Richmond, but other places hogs have done well and brought good prices. Cattle are good and look well, but sell unusually low.

HORTICULTURAL REPORT.

SMALL FRUITS.

Raspberries and blackberries were abundant. Strawberries were partially killed while in blossom, but the crop was fair. Many fine specimens were brought to the Society on exhibition, and showed knowledge on the part of the cultivators.

GRAPES.

The grapes were very fine and abundant. The grape exhibit at our meeting was thought to be the finest collection we ever had—almost all known varieties and some unusually large bunches.

LARGER FRUITS.

The crop of cherries, plums and peaches has been large, and the contrast to last year very noticeable.

ORCHARDS.

Trees came through the winter uninjured. The crop of apples, both early and late, was very large, and the apples smooth and quite free from worms. Pears were very good.

No fairs have been held during the year where premiums were given, but some exhibits of fruits, vegetables and flowers have been so large as to be like fairs.

The Society is in a flourishing condition, all debts paid and the members are interested and enthusiastic, anxious to learn of "new" ways in agriculture and horticulture.

RECOMMENDATIONS.

The following recommendations have been submitted to the Society from time to time:

Ground to be planted in the spring should be plowed the preceding fall before freezing, then again in the spring, and thoroughly harrowed.

Be ever diligent in fertilizing.

Rotate crops.

Plant orchards every ten or fifteen years, so as to have trees always in their prime.

JESSE STEVENS, *President.*

JOSEPHINE GRAVES, *Secretary.*

REPORT OF MONROE COUNTY HORTICULTURAL SOCIETY.

This society was organized the 31st of last March with eighteen members. The officers elected were: I. M. Rogers, President; W. H. Neeld, Vice-President; George P. Campbell, Secretary; Fred Fess, Treasurer. We now number twenty-nine members. Our meetings are on the second Wednesday of every month; all, are expected to go with well-filled baskets, and we are always served with sumptuous dinner by the lady members. The attendance and interest has generally been very good. A few of the subjects treated upon were: "The Planting and Care of an Orchard," by W. H. Neeld; "Planting and Care of Small Fruit," by I. M. Rogers; "Home Adornment," by Mrs. Lizzie H. Campbell; "The Farmer and His Occupation," by S. H. Phillips; "Time of Gathering and Caring for Apples," by W. M. Farmer; "Gardening," by Jos. S. Dinsmore.

This society carried off the first premium at the State Fair on display of fruit, putting \$20 into the treasury. The greatest success of the society was the fair held October 19 and 20 in the Opera House at Bloomington. The weather clerk saw fit to send us almost a continuous rain during the time, which interfered greatly with the success of the fair. A great many had their exhibits ready to bring, but the rain prevented them from getting there. The number of entries were as follows: Fruits of all kinds, 260; floral, 14; vegetables, 47; table luxuries, 52; total, 373. The society's net profit was about \$22.

We certainly had as fine a show of fruit as was ever seen in the State. It was estimated that there was about forty bushels of apples on exhibition. Monroe County never had a finer crop of fruit than this year. We now have about \$40 in our treasury, which we think is doing pretty well financially for an eight-months-old society.

GEORGE P. CAMPBELL,
Secretary.

GRANT COUNTY SOCIETY.

The officers of this society are: President, Snead Thomas; Vice-President, Oliver H. P. Morehead; Secretary, J. H. Fishel; Treasurer, Laura Fishel.

We hold meetings monthly on the third Saturday of each month. Our meetings are not large, but most of the members are workers and do their part and make the meetings both interesting and profitable. We hold our meetings about among the members. We usually have two papers on some horticultural topic read at each meeting, followed by a discussion. Some of the most interesting meetings we have held we had no paper read, but we took some subject announced at the meeting with some one appointed to open the discussion. For instance, at our April meeting in 1888, the potato, soil and cultivation, time of planting varieties, large or small potatoes for seed, cutting the seed to one eye, or planting whole, was the subject, and brought out quite a lively discussion. We have adopted the exhibition of fruit, flowers and vegetables in their season for each meeting during this year, and expect to hold a strawberry show and picnic in the strawberry season.

SNEAD THOMAS.

THE PLAINFIELD AGRICULTURAL AND HORTICULTURAL SOCIETY REPORT.

This society held two monthly meetings; one at Dr. A. Furnas's, June 9, which was well attended and one at Geo. A. Guthrie's, July 27, which was also, well attended. It held its annual fair August 23, at the beautiful grove of James M. Barlow. The fair was largely attended and the display of stock, grain and vegetables were very large and of a superior quality.

Our standing committees report as follows:

Orchards are in excellent condition and fruited as near perfection as they have for many years; most pears did well; small fruits not a success, except some few varieties and in certain localities.

ENTOMOLOGY.

The Colorado bug more numerous than last year; other insect enemies not so destructive, only in a few neighborhoods.

ORNITHOLOGY.

Our ornithologist report quails on the increase, also, the English sparrow; other birds are becoming much fewer and many species are almost extinct. Poultry did exceedingly well and prices satisfactory. Very little chicken cholera in the country. Many persons have gone into the fancy chicken industry and are meeting with excellent success.

A. W. CARTER, *President*.

JAMES M. BARLOW, *Secretary*.

THE MARION COUNTY AGRICULTURAL AND HORTICULTURAL SOCIETY.

Progressive in its plans and earnest in its efforts, the society the past year has steadily advanced retaining its usual interest. Many excellent papers have been provided and the discussions have been marked with great earnestness. On examining the reports during the year, I deem the following a fair abstract of them:

Wheat was short in quantity and inferior in quality, averaging No. 3. A more abundant crop of good corn was never known throughout the country. Hay one-half a crop. Oats average yield.

Garden products good with the exception of early potatoes.

Standard fruits were abundant. Most small fruits were a short crop.

The financial condition of the society has been much better than for the past two years, enabling us to hold our three annual fairs, (Culinary, Strawberry, Live Stock and Vegetable) at which \$128 was offered in premiums.

It has been sufficient to meet every obligation of the society, leaving a nice little sum in the treasury with which to commence the new year, and we hope for continued success.

The officers for the present year are as follows:

President, Fielding Beeler.

Secretary, Mrs. A. G. Chandlee.

Treasurer, Mrs. W. B. Flick.

MRS. A. G. CHANDLEE,
Secretary.

REPORT FROM DELAWARE COUNTY SOCIETY.

During the past year the Society has held its regular monthly meetings at the residences of the members, to which the public were invited. Most of the meetings were interesting and profitable. Essays and papers have been read by the members of the Society. Financially the Society is in a good condition.

The Stock Breeders' Association and Horticultural Society united in giving a Farmers' Institute at the court house in February, which was well attended by the farmers of Delaware County. A number of good essays and papers were read and thoroughly discussed. We think we can truly say that our Society has always had papers and discussions worthy a place among the best.

Officers for the coming year:

President—Mr. F. J. Claypool.

Vice President—Mrs. Dr. Hathaway.

Treasurer—John Fulhart.

Secretary—Ida Meeker.

IDA MEEKER,
Secretary Delaware County Horticultural Society.

MITCHELL DISTRICT HORTICULTURAL SOCIETY.

President Furnas assisted in organizing this Society in February last. They have an enrollment of eighteen members and are expecting many more. There has never been a Society of this kind in this part of the State. The outlook is good for a lively and interesting Society, and that it will be a valuable aid to horticulture in this locality. The Society has invited the State Society to hold its summer meeting at Mitchell the last of August, and the invitation has been accepted.

Officers:

Joseph A. Burton, President.

Daniel Sherwood, Vice President.

Morgan Keane, Secretary and Treasurer.

**SUMMER MEETING OF THE INDIANA HORTICULTURAL SOCIETY,
HELD AT RICHMOND JULY 13 AND 14, IN CONJUNCTION WITH
THE MEETING OF THE WAYNE COUNTY AGRICULTURAL AND
HORTICULTURAL SOCIETY.**

The horticulturists arriving on the early morning trains were met at the depot by Jos. Ratliff, Benj. Stratton and President Stevens, of the Wayne County Horticultural Society.

We were escorted by these gentlemen to a large four-horse band wagon, provided for the occasion by the Wayne County Society. The wagon was loaded with twenty or more live horticulturists, to be driven for a hasty visit to the farms of the leading fruit growers about Richmond. On this trip we had the company of the veteran and esteemed horticulturist, G. W. Campbell, of Delaware, Ohio, Secretary of the Ohio State Horticultural Society. We drove west from Richmond, making hasty stops among the fruit growers. Our first stop was at the place of Sampson Boon. Mr. Boon being absent his good wife showed us about. We found his small fruits well cultivated. Crescent, Cumberland and Mount Vernon strawberries were looking well. Small trees of Keiffer pear and Robinson plum were showing considerable fruit. The next stop was at Edward Mathews'. Here we found Gregg, Souhegan, Ohio, Pride of the West and other raspberries doing well. He considers Gregg the best for shipping. We were well pleased with the appearance of Pride of the West. It is a good, vigorous grower, hardy, productive, good quality, and early. He finds Cumberland, Indiana and Mount Vernon his best strawberries. Our next stop was at Richard Shute's. Here we found quite a large plantation of blackberries, raspberries, strawberries, dewberries, etc., all thoroughly cultivated and perfectly clean. Snyder, Taylor and Ancient Britain blackberries were heavily loaded with fruit, and it was difficult to determine which should have the palm. These three are undoubtedly the best well tested varieties we have for our State. Ohio was his favorite raspberry; Crescent, Indiana, Cumberland were his best strawberries, ranking in the order named. Fay's currant does well here. Cuthbert raspberry is profitable. A number of Lucretia dewberries were planted, but not old enough to produce much fruit.

In our party was the genial and entertaining Timothy Nicholson, one of the Trustees of Earlham College (Friends'). When we arrived at the college Timothy showed us through the commodious and well arranged rooms of the old and new buildings, including the laboratory, museum, etc., showing us that Earlham was well equipped for the higher educational work.

We were next driven east of Richmond to the home of the late Mark Reeves, a man of wealth, who had a high appreciation of horticultural art, as was evidenced in this magnificent place. Here can be seen many rare as well as the more common ornamental trees and shrubs, so planted and arranged as to produce the most pleasing effect. We were cordially met by Mrs. Reeves, who took an interest in showing us through the green-house, grapery and among the small fruits, etc. The English Morello cherries were heavily laden with fruit here.

We were next driven some distance east of the city to Nathan Garwood's, the old home of our friend Benj. Stratton. This is a beautiful location 165 feet above

Richmond, commanding a fine view of the country for miles around. New Paris, Ohio, three miles away, is in full view. The soil is what would be called a good sugar tree soil. Bartlett, Seekle, Doyenne and other standard pears were loaded with handsome fruit. The Marlboro and Hansell make a good growth, and are esteemed highly, especially the latter, for its earliness and continuing so long in use. Souhegan is a favorite. White Pippin and Golden Sweet apples were heavily loaded with fruit. On our return to the city we stopped at the home of our veteran nurseryman friend, Thomas Morris, who gave us a hearty welcome and conducted us through the apple orchard, nursery, vineyard, and among the small fruits. His grapes were trained to rather high trellis and given plenty of room. Most of the leading varieties were represented. Concord, Ives, Moore's Early, Worden, Brighton and Niagara were remarkably fine. On low, moist ground the Industry and Downing gooseberries and Fay currants were bearing good crops. The Warner pear is fruiting here. Thos. G. Longenecker, of Dayton, Ohio, joined us here, and was a valuable addition to the party.

Leaving here we next drew up at the residence of Isham Sedgwick, in the suburbs of Richmond. Mr. Sedgwick is one of the firm of Sedgwick Bros., of woven wire fame. Mr. S.'s horticultural fancy runs in the direction of grapes. He has twelve or fifteen varieties trained on woven wire, which, by the way, makes an excellent trellis. The tendrils catch on the wire and there is no tying up. Many saw for the first time the Centennial, Faith, Francis B. Hays, Victoria and Empire State fruiting. We were shown through Mr. S.'s kitchen, which is the most conveniently arranged of anything we have ever seen in this line, convenient, comfortable, tidy, *multum in parvo*.

We made a very hasty call at the green houses of Hill & Co. Mr. Hill has been remarkably successful and has built up a very large business. They have twelve or more large green houses 100 feet in length. This business is largely due to the good business judgment, integrity and enterprise of Gurney Hill.

From here we were taken to the Huntington House and served to an excellent dinner without charge. After dinner, with some additions to our numbers, making in all twenty-five persons, we were driven to the home of our marshal of the day, Joseph Ratliff, a mile or so north of Richmond. Here we found a well kept farm and a nice young orchard of plums just coming into bearing. The orchard is composed mostly of European varieties, Washington, Jefferson, Gen. Hand, Lombard, German Prune, etc. German Prune and Lombard trees were especially heavy loaded with large, fine fruit.

We continued our tour five miles north through an undulating well tilled farming country, until we pulled up to the well kept farm of our good friend Jacob D. Hampton. We were shown through the large orchard of friend Hampton, who is an extensive apple grower. The oldest orchard is forty-two years old, one of eighteen, and one recently planted. He cultivates and fertilizes well. Among summer varieties he finds the English Hagloe the most profitable. The tree is entirely hardy, having passed unharmed through the severe winters of '80 and '81. It is a uniformly good bearer; sells as well as Maiden's Blush where known.

Eighteen year old trees were bearing from ten to fifteen bushels each. Ripens last of August. Red Stripe, Benoni, Sum Pearmain, Golden Sweet, and Daniel are all profitable summer apples with him.

Our return to Richmond by a different route took us past the small fruit farm of Geo. H. Lewis. Mr. L. cultivates well; everything was in good shape. Cuthbert is his best red raspberry, Crescent his most profitable strawberry. After a very pleasant and profitable day we were distributed among our horticultural friends in and about Richmond for the night.

On the morning of the 14th, the State Society and Wayne County Society met in joint session on the magnificent grounds of Col. John F. Miller, Superintendent of the Pennsylvania R. R. Co.'s lines. These grounds are one-half mile north of Richmond and we think the finest private grounds in the State. In the native forest, near by, Mr. Miller has constructed a primitive log cabin and placed in and about it much of the furniture of log cabin days. On the porch of the cabin and in front, seats were arranged in the ample shade, and here our meeting was held. Three long tables seating fifty or more each were arranged near by, upon which the bountiful and elegant dinner was served. There was a long table on which was displayed grains, fruits, vegetables and flowers, many of which, deserve special mention. Among the newer varieties of fruits was the Olivet cherry, shown by Wm. Clark of New Paris, Ohio. This is a large, dark cherry of good quality, said to be productive.

Montmorency cherry by G. W. Clark, New Paris. This is a large, light red colored cherry of good quality, very productive and hardy. It attracted much attention.

Prunus Pissardi or Purple Leaved plum, by E. Y. Teas. Fruit medium size, dark purple, of fair quality. This is the finest purple foliated tree we have.

Industry gooseberry by Thos. Morris.

Agawam blackberry by Theo. F. Longenecker, Dayton, Ohio.

Lucretia dewberry by Benj. Stratton and others that for want of space we can not mention. By 10 o'clock a large company had gathered and the meeting was called to order by the President, Dr. Furnas of Danville, who said, I believe we are now ready for business. I understand the Wayne County folks have something to say at this time.

Mr. Jacob Hampton then delivered the following address of welcome:

"Honorable President and worthy members of the State Horticultural Society, I rise on behalf of the Wayne County Society, and bid you welcome in this beautiful grove, so kindly furnished us by our friend, John F. Miller, for this occasion. Less than 100 years ago the Red man held undisputed sway on these hills and valleys, and pursued his game with his bow and battle-axe for the support of his squaw and papeose. Beneath these stately oaks and towering elms the brave young warrior wooed the dusky maiden in the twilight of evening in view of happier years. And not until 1805 was the print of the White man's foot seen on what are now our rich and beautiful fields. Well do I remember when the wilderness was the general, and the cleared land the exception. But it is reversed now. Other men have labored and we have entered into their labors. The first acres that were cleared by those worthy pioneers were dedicated for an orchard, the first fruits of

which were hailed with delight by both young and old. Nearly all the fruit trees of that early day were furnished by Andrew Hampton and Cornelius Ratcliff, who were as trustworthy, honorable men as this or any other country ever furnished. You and I have met here for the purpose of perpetuating their labors, the importance of which admonishes us that a 'few words fitly spoken, are like apples of gold in pictures of silver' are more appropriate than eloquence on this occasion. So we repeat the words of welcome, and extend to you the right hand of fellowship in the noble work of horticulture."

President Furnas responded as follows:

"My good friends, members of the Indiana State Horticultural Society, and all visiting friends, I will say that it gives me much pleasure to acknowledge the very kind and hospitable reception which seems to be extended to the Indiana State Horticultural Society, and it is my good pleasure on this occasion, I think I am only extending the words of every member of our society, to say we thank you for this very hospitable entertainment. We have but a few moments to be with you officially, and I want to explain a little our style of work. We have always had a winter meeting, for the past twenty odd years, and we gather up such statistics and facts as we can collect in the winter, and it occurred to us that it would be a nice thing to gather some facts in the summer, and learn something about our summer fruits; raspberries, blackberries, strawberries and early fruits, and for that purpose we are here. I wish to explain to you that the order of our society is, that everybody now in good standing, and all horticulturists, no matter whether members of this society or not, have a right to talk. We want his expression, his opinions, and his experience, and we want no one to go away from here saying, 'I knew something which I did not tell you.' That is just what we are here for to-day, to gather up these facts and discuss them."

Mr. Kingsbury, of the Indiana Farmer, suggested, in behalf of those who were too modest to speak, that a question drawer might be opened later, for which they could prepare questions, which was approved.

Mr. Bulla said: "I want to correct a mistake of Jacob Hampton's in regard to the first orchards being planted in this county by Cornelius Ratcliff and Andrew Hampton. My father planted the first orchard in the county, then known as Dearborn County, but changed to Wayne in 1810. The trees, as a general thing, were seedlings. He brought forty trees from Dayton, Ohio, and planted them out where I now live, and that was the first orchard planted in this county.

After some other remarks upon this subject, the subject of strawberries was brought forward for discussion.

Nicholas Ohmer, Dayton, Ohio. I am not a member of your society, but will say a word in favor of the Bubach No. 5. It is a productive, large, irregular berry, produces fine foliage. I know of nothing, except the Crescent, that will stand the weather so well. If I were to plant, I would certainly plant a good many of the Bubach No. 5. But what will do well with me would not do well everywhere. That is the trouble with strawberries.

Mr. Longenecker, Dayton, Ohio. I have the Bubach, and my experience corresponds with that of Mr. Ohmer. In order to settle the merits of the berry, we

want to get reports from all over the country, and all the testimony is in favor of the Bubach. It has done well everywhere, north, south, east and west. Whilst I am up, I will touch on a few of the varieties. The Haveland is the most prolific of the Crescent class. The Jesse seems to be about one of our best and perfect bloomers. I doubt whether it will be as profitable for me as the Bubach. I talk thus from my own experience, and from the experience of others. The Jewel does not do well. The Ohio is a seedling, and the Kentucky resembles it in growth. It seems more productive than the Kentucky. The Parry is not quite satisfactory. The Lida, when good healthy plants, seems to fruit well enough, but lacks stamina. The Belmont is not doing well anywhere I hear from it. From reports I hear from many places, we can not yet discard the Crescent.

Dr. Furnas. The Belmont does not suit our soil. It comes from sandy soil. Would like to ask, are you upon the hill, like Ohmer?

Mr. Longenecker. I have seen it tested in low land, and it does not do well in our locality.

Secretary Hobbs. We have it on low ground, and it is a failure. So generally is the Jewel. The Bubach is the finest plant we have ever had on our place. I saw it in fruit on Mr. Haine's place at Delphi, and it was the next best that he had on his grounds. He thought the Logan the best, and probably it did produce more fruit than the Bubach, but the Bubach was an excellent plant, did not produce as many berries as the Logan, but they were larger. My recollection is that the Logan is pistillate.

Prof. Troop, Purdue University. We have about 70 varieties of strawberries growing this year. A few days ago I went over the berries and marked the per cent. of rust on each variety, and I see I have Bubach marked 1 on the scale of 10. In regard to the Parry, it has not done well for three years. Jewel does not do well. It is a fine berry, but can not get enough of them. Does not make plant enough. I would like to hear from the Warfield No. 2. It is fruiting this year with us for the first time. I think the Warfield is rather more productive and a little earlier than the Bubach. We are on what is called the second Wabash bottom, in black, sandy loam. The Warfield, I think, is as profitable a market berry as the Bubach. It averaged this year fully as large as the Bubach. It has good foliage.

Secretary Hobbs. The Warfield is being planted very extensively in southern Illinois. We had a letter recently from Mr. Webster, Centralia, Ill., that they were planting these by the thousands, and that means it is a good berry for that locality. It has an imperfect flower.

Mr. Kingsbury. Will you allow me to ask Mr. Hobbs a question? I wrote to Mr. Haines a short time ago and asked him to send me a potted plant of the Logan. He said he had a better way of producing plants that was more satisfactory, and that they were growing better than if potted. Can you tell me what that method was?

Mr. Hobbs. I saw nothing of the kind on his grounds. Do not know what it can be. He may refer to transplanting tubes.

Dr. Furnas. Think E. Y. Teas can answer this.

E. Y. Teas. Any blockhead can do it. There is nothing peculiar about it.

Mr. Longenecker. The method of propagating strawberries is this: The sets, before rooting, are cut off of the parent plant, leaving about an inch of the runner from nearest the parent plant with the set. Prepare a bed of rich ground the same as for garden purposes. The sets may be planted by pressing the short piece of runner left with them into the earth. As the sets need not be over two inches apart, a large number of plants may be grown in a small space. Protection from the sun is necessary. Frames six by eight feet may be made by nailing fence boards together. Cover with cheap muslin. These frames are light and may be easily handled by one person when watering the plants. When first put out, the little plants should be watered daily, for their growth, until rooted, depends upon protection from sun and winds, and a supply of moisture.

Richard Shute. Would like to ask this gentleman here about the May King.

Mr. Longenecker. Generally not as productive as reported. It is reliable, but not very productive. Once in a while it does pretty well.

Jesse Stevens. It is a good one, if you have rich land. I have the May King doing well, and other varieties doing no good within four feet of it.

Samson Boone. I would like to know if any one is acquainted with the Crimson Cluster. I saw it mentioned very favorably in a magazine a short time ago.

Mr. Longenecker. Reports on it conflict. It will require further time to ascertain its merits.

Washington Clark, of Ohio. Would like to ask in regard to the Jersey Queen.

Mr. Longenecker. It requires dry weather in fruiting time. It is a good berry, rather productive, flavor first-class.

Geo. W. Campbell, Delaware, Ohio. Some one who had been on the grounds was very sorry Mr. Hinsdale was going to introduce that berry. He seemed to have knowledge of it, and did not give it as good a reputation as Mr. Hinsdale did. He expressed the opinion that it would not be a good berry.

Mr. Johnson was asked for his opinion of the Jesse, and replied: "All I can say is that the largest berries I ever saw produced were Jesse, produced by a gentleman from Hancock County. I know but little about them except what I saw at our strawberry meeting in June. Mr. Kingsbury saw them. Think he has been on the grounds of the grower and probably knows more about them than I do. I understand he has orders for all the plants he can furnish.

Secretary Hobbs. I think it would be well to consider the Jesse more than has been done, and any one who has had experience would do well to let us have the benefit of it.

Dr. Furnas. The general talk about the Jesse is that there are not enough berries. I had a little experience with them. I bought a box to take home to my folks. In the meantime, they came across some Jersey Queens and thought they would have a little surprise for me, and when I got home and compared the berries, the Jersey Queens were almost as large as the Jesse.

Mr. Longenecker. I do not think as much of the Jesse as we were led to expect a few years ago; still I think favorably of it.

RASPBERRIES.

Sylvester Johnson. I do not know that I can say anything that will be interesting. All I know about raspberries I got from Mr. Ohmer, of Dayton, and I think he is the one to talk. I have been quite successful in raising raspberries. Never had as good a crop as this year. Think it was because of the rains we had just when raspberries needed them. The Gregg raspberry is the raspberry for profit. In some places it has the reputation of being tender, but it is not so with me. I am better pleased with the Souhegan than ever before. It ripened about eight days earlier, and came into market when raspberries commanded the highest price. I shall plant more Souhegans than I have heretofore, as I think better of them than heretofore. I am disgusted with the red raspberry for market. Do not think I shall plant it any more except for my own use. I shall have none to sell. I like the Thwack.

Mr. Ohmer. The Thwack played out long ago.

Mr. Johnson. The Thwack is the best red raspberry; has the best flavor. Another thing I like about it is that its season is so long. For six weeks we have the Thwack berries.

Dr. Furnas. I wish to indorse the remark of Mr. Johnson. I cannot handle the red raspberry.

Elisha Howland, Indianapolis. We have no difficulty in selling all the red raspberries I can raise, but this year the price has been no better than the Gregg and Souhegan, and it is a little more expensive to handle. The Souhegan is just about as early as the Turner. The same time we can pick the Turner we can pick the Souhegan. It is very hardy, and a profitable berry on account of it being so early. You can not pick so fast as the Gregg; it will cost more per gallon to pick the Souhegan than does the Gregg. The Gregg is most profitable because handled with less expense.

Mr. Johnson. Can you get your reds picked as low as blacks?

Mr. Howland. No, sir; I pay eight cents for red and six cents for black, and sometimes when they get small I pay ten cents for red. I use quart boxes for black and have to use pint for red. There is a difference of pretty nearly half in the cost of crates, or within four cents. There is four cents' difference between the quart and pint boxes. Last year I could get two and one-half cents more for the red, but this year it has sometimes dropped to a little less than black, and it will not average any more than the black.

Mr. Johnson. I can not get my red picked for less than eight cents, and can get the black picked at five cents, and they would much rather pick the black at five than the red at eight; can make more money at it.

Secretary Hobbs. In regard to the Cuthbert, James Sanders, of Westfield, grows a good many Cuthberts, and the little town of Westfield furnishes a market for all he can raise, and he thinks it profitable. So it seems to be a difference of locality both as to their production and profit.

Mr. Johnson. It is not for the want of a market. I could sell all I could raise. One of our grocers will not take anything else than red. He can not sell anything else, his customers being the "upper tens," but the trouble is in raising them and getting them picked so as to make a profit.

Dr. Gifford, Kokomo. I want to make a remark, as I am further north. The Gregg raspberry is surely one of the best with us. It stands first in regard to furnishing a berry that will make a profit, though the winter weather last winter and winter before killed it some, but all the living vines this year were overloaded. One point in reference to the red. Mr. Johnson remarked he would keep them for his own use. If he prefers it why will not others prefer it, and why will it not bring better prices? It is more tender than the black cap, and that is one of the great points in favor of the Gregg; its solidity makes it possible to carry it a great way to market. If we can pick the red berry and put it in market the same day, everybody wants the red. Another trouble is in getting the red picked. Pickers do not like to pick it even if I do pay more. Everybody who has a sharp taste for good fruit will prefer the red berry if he gets it fresh and in good condition; but the trouble is its tenderness, which prevents its getting to market in good condition.

Mr. Ohmer. Have been growing raspberries for many years. Have tried all the varieties known to be good for market. Am proud to be the disseminator of the Gregg. It certainly has the lead. The Greggs and Souhegans are the two best blacks I know of. The Ohio I do not want, because they are nearly all seed. They weigh well after they are dried. The Souhegan is about a week or eight days earlier than the Gregg. They are gathered before the Gregg comes in. We are too near Cincinnati and Cincinnati too near the Southern States; the people are tired of raspberries before ours come in, though ours bring a better price because they are fresh. When the Greggs begin to ripen, I have difficulty in getting my Souhegans picked. I have bushels of Souhegans now drying up; can not get them picked; they are too small and will not sell in comparison with the Greggs. I have gathered from 500 to 600 bushels and sold at a low price, but hope when I come to balance my accounts there will be a little on the profit side.

The Gregg raspberry does not do well in some places, which is attributed by many to the cold winter. I believe I can safely deny that. I believe the damage has been done previous to the cold winter, but whether it is the hot sun late in the season, or drouth, or some disease which may take hold, I am not sure, for you sometimes see the bark peeled off near the ground. But when the Gregg does well there is nothing equal to it, and for the introduction of that berry I think I am worthy of being prayed for after I am gone. The red raspberry is not profitable with me; they cost me twice as much to pick and do not bring any more in our market.

Now, there is the question of gathering berries. It has been a trouble to many, and I think Nick Ohmer has the best system in the United States; the simplest and most correct. Here are brass checks marked four quarts, to be strung on a wire by the boys and on a string by the girls. When they have ten or twenty they hand them to me. Mind you, they are given for a gallon. They take the empty stands with four quarts with them to the patch and bring them back full. I had sixty pickers at one time. They poured them from the quarts into the drawers. I have a foreman in the patch who sees that they are well picked, and examines to see if they are mashed any. I have two little girls not over eight years, who are the best pickers I have. When they have ten or more of these checks they hand them to

me and I give them a card; and when pay-day comes I can pay fifty or sixty pickers about \$300 in a very short time. When one comes out with a quart badly picked I pay him off.

President Furnas. We want to hear just such men as Nick Ohmer talk. He is the largest handler of raspberries and strawberries we are acquainted with, and you will do well to listen attentively to what he says.

Mr. Johnson. In regard to the difficulty of getting the Souhegans picked as they are beginning to run down in size, and the Greggs are coming in I use a little strategy with our pickers. Along in the evening about the time for closing, I say to them, "Now boys and girls, let us go and pick a quart of Souhegans." They take up with it, and I get sixty quarts picked just to end up with in the evening, and I get them picked without extra charge.

Mr. Kingsbury. I just want to say one word in vindication of the Gregg. I am satisfied Mr. Ohmer is correct in his theory that it is not the winter that kills the Gregg, and the reason I have for it is that my raspberry patch is on the hill side sloping to the north and those on the north side, most exposed, have no disease, and if it were due to the cold that row would surely show it.

Mr. Howland. I have just discarded the check and adopted the book; and now as a picker comes in we write his name in a book with a number after it. The first one who comes is No. 1; second, No. 2 and so on. He takes that number for the season. Then we turn the book the other way, and when they bring in the berries here is No. 1 comes in with his so many quarts, the number is there ready, and I can make the entry just as fast as they can pass the door, and I know every day just how much I am owing each and every one of them. I never run out of tickets.

Mr. Ohmer. The children like to take the checks home and know just how much is coming to them.

President Furnas. Wm. Parry told me they would sometimes have \$100 worth to redeem.

Secretary Hobbs. Before leaving raspberries I think it would be well to consider the Shaffer.

Prof. Troop. I have the Shaffer, and for canning purposes it is probably ahead of anything we have. I want to ask a question in regard to the white or cream raspberries; would like to know if there is any profit in raising the Caroline and that kind of raspberries?

President Furnas. I find no profit in them, I like to have them just for fun.

Mr. Longenecker. When the Caroline stands our climate, it is certainly splendid for jam or jelly.

Mr. Ohmer. There is no better for jam or jelly than the Shaffer Colossal.

Mr. Campbell. I regard the Shaffer as one of the best for table use. It has the best flavor. It is too soft to be profitable for market and not productive, and I doubt whether it will be for a good while a profitable berry. I have grown it a few years only. The berries are very large but are unfortunate in color.

Mr. Johnson. Nothing has been said about pruning. The Gregg should not, under any circumstances, be allowed to grow more than twenty-four or thirty inches.

Mr. Longenecker. There are a number of market growers here, and it might be well for them to say whether there is more trouble to sell the Shaffer than any other berry.

(Then followed some remarks by Mr. Frost, of Edinburg, and Secretary Hobbs, but on account of the noise and confusion around us we were unable to get them.)

BLACKBERRIES.

Mr. Howland, of Indianapolis. I think, if any difference, the Snyder has a little advantage. Next is the Taylor; but for the past two years the latter have been unsatisfactory here on account of the drouth; too many dried up; but now they are beginning to mount up, and seem to be in condition to develop fully and make a fine crop. Taking blackberries in general, they are going to be more than we can ask in numbers, and of fine quality. Can not say what the price is to be. Cultivation has very much to do with the size of the blackberries, even in a drouth. The Taylor is looking well, but do not think they are as well loaded this year or last as the Snyder.

Dr. Furnas. Taylor on my grounds is remarkably heavy loaded. I never saw on my grounds anything to compare with it. Taylor and Snyder are my blackberries.

Mr. Ohmer. I had gathered yesterday a stand of Snyder blackberries, the first of the season. They have been considered a very small berry. They are small compared with the Lawton, I will admit. Some say too small for market. Those I gathered yesterday almost equaled the Lawton; large, fine, will sell in any market, if brought in good condition. It is hardy, most prolific, and there is more money in that berry than any I have ever tried. I attribute this growth to the fact that I have clipped back the laterals. When about three feet high, in the spring of the year, I clip them back not to exceed eight or ten inches. Then you will not, perhaps, have as many berries, but you will have berries to produce more money. The same can be done, and is done by me, with the Taylor. Cut them back in the spring of the year. Every bud will produce a large cluster of berries, and unless you do this you will have small berries. Last year I had a good crop of blackberries. When those of other parties dried up I had good ones. That is the system, not only the cutting back, but frequent cultivation between the rows. I have the old Lawton, about three acres of them, producing large crop last year, and this year about half a crop. I have Taylor, Snyder and Lawton. They should not exceed three feet high. They are planted four by eight apart—eight feet wide and four feet apart in the row. You can hardly get through for the berries, the canes are so full of fruit.

Dr. Furnas. You allow them to grow up between these hills?

Mr. Ohmer. I allow them to grow up, but I have a tool with five sharp blades, almost level, diamond shaped, which cuts clear across, and when they are up six inches to a foot, I cut everything away. I cultivate my ground by that means, and cut away all the sprouts.

Secretary Hobbs. I wish to emphasize what Mr. Ohmer has said in regard to the trimming. Our experience has been the same as his. The difficulty with the Snyder is that it undertakes too big a contract. It sets more fruit than it can properly support, so you reduce the fruiting surface to what the plant can support.

Mr. Clark. Is there any one present who knows anything about the Erie?

Mr. Longenecker. I have tried it, and find it is not likely to prove hardy enough for this section.

Prof. Troop. We have the Erie; set it out a year ago this spring, considerably farther north, and it has proved perfectly hardy, and is just loaded with fruit this year. I like the Erie as far as I have seen it.

Mr. Howland. I want to ask Mr. Ohmer about the tool he uses.

Mr. Ohmer. It is a tool that can not be bought. It was made by a common blacksmith at Stillwater. The fellow broke up after he made that. I have fifteen varieties of tools, but think that particular one the best. For ordinary cultivation I use the Planet Junior.

Mr. Kingsbury. I want to say a few words about the dewberry. Day before yesterday I went over to Greenfield to see the dewberry patch of Mr. Walker. He promised to send me a quart to-day, that you may see them. Presume they will be here this afternoon. The berries are $1\frac{1}{2}$ inches long and say $\frac{7}{8}$ in diameter. Now as to the dewberry, I am going to give you a few figures. At the rate his dewberries are bearing this year, and the increase he expects next year, the dewberries are going to make him a fortune. This year the yield will be an average of two quarts to the vine. The vines are about six feet apart, making about a thousand vines to the acre. That will be about 200 quarts to the acre. This year, the first year after planting (he planted them a year ago last spring), the berries sell at Greenfield at twenty cents. Next year he expects to at least double the yield. That will make him \$300 per acre, at fifteen cents this year; the amount next year \$600; the year following double that, and the next year \$2,400 an acre. Now you can buy these plants at \$35.00 a thousand, and I am not selling plants, either.

Mr. Campbell. I think I would a great deal rather hear results than calculations. There are a good many questioning as to whether this dewberry is going to be particularly valuable or not. I have been a little fearful, but it seems to be the most productive of anything I have seen. It is unfortunate in attaining its color before it is entirely ripe, and are often picked before they are ripe, but when fully ripe I think it is equal to any.

E. Y. Teas, Dunrieth. It has done better for me, and as far as I have tried it it is finer than the general blackberry. Last year we had a fine crop of dewberries that ripened fully and completely, and not a single blackberry, because the dewberry came earlier and was gone before the drouth became so severe as to destroy the blackberry crop, and we thought it was a great improvement. It has been as hardy, as far as I know, as the Snyder blackberry, and more productive in different localities. Yesterday I thought every man that was in Mr. Shute's blackberry patch spoke against it. To-day it seems to me the testimony is all in favor of it. In many places in Iowa, Wisconsin and Michigan, it is considered more hardy.

In many places south of that it is too tender to be of any use. We have such different reports. I never had to protect it in winter, never had it destroyed or injured as much as I have sometimes had the Snyder.

Secretary Hobbs. It is not hardy with us. We have very little fruiting surface this year on old plants. I think the proper way to grow it is to mulch it, cover it over as you do strawberries. In the spring remove the mulch from the top and spread underneath the canes, and in that way you protect the fruit from the dirt.

Samson Boone. We have heard nothing from the Wilson Junior blackberry.

Dr. Furnas. It did not succeed with me.

Mr. Campbell. Think it winter-killed almost everywhere it was tried in this State and Ohio.

E. Y. Teas. I think in regard to protecting the Lucretia dewberry they do not require covering, but if held near to the ground they will not be winter-killed.

Benj. Strattan. That last remark answers my experience. Those plants that stood up high were killed, but if kept close to the ground were not injured.

Dr. Furnas. When I was first talking of protecting grape vines, Reuben Ragan told me that if a rail was thrown on the grapevine it would protect it, and the same is true of the dewberry. Being held close to the ground prevents it from being winter-killed.

Mr. Kingsbury. Mr. Walker protects his dewberry. He takes straw, and when the time comes to cover the plants, he takes a shovelfull of the half-rotted straw and covers the plant. When spring comes he pulls it away, leaving place for the plants to come up. As to the picking, that has always been an important objection to the dewberry, but when I saw them growing as compactly as they do there, the pickers making more money than in picking the raspberries, is evidence that that is not really an objection. They came in while I was there, and received from 45 to 60 cents for a morning's work, and only worked three hours. They could readily make \$1.25 per day.

SACKING GRAPES.

Mr. Campbell. I have grown grapes for a great many years; about the sacking business, I have practiced it in a kind of amateur way. It is a good deal of trouble; if not for that, I would advocate it very strongly indeed. If it will pay in a small way, it will pay in a large way. It protects the fruit if done early, both from mildew and from rot, and also from the depredations of birds.

Benj. Strattan. What is the best time for sacking?

Mr. Kingsbury. As I have not had experience very largely in that way, can only say, a great many persons recommend that they should be sacked when just out of bloom, and the question has been asked whether or not they would properly set if sacked. I think before blooming they would, and if to prevent mildew and rot, I think the earlier they are sacked the better.

Dr. Furnas. In case fungus were on them, would sacking prevent the development of that fungus?

Mr. Kingsbury. I think it would not, unless the germs of the fungus were destroyed by some application before. It is thought that moisture is necessary in order that fungus should develop, and it may be that being kept dryer inside the sack would be a help.

Secretary Hobbs. I have noticed somewhere a water-proof bag for bagging grapes recommended. They seemed to think quite well of it, and I think it is a good idea.

Mr. Kingsbury. I think the subject of grape rot should be discussed, as it seems to prevail this year. I find some in my own, due, I think, to the warm rains. I was very careful to cut each grape from the bunch and throw it into the stove, not let them touch the ground.

Mr. Johnson. Some varieties are rotting very badly. The Jeffersons are rotting very badly, not any amongst the Ives and Concords. Prentice is rotting some, Duchess more. I did not have a rotten grape on my premises last year.

Mr. Kingsbury. Did you observe the brown spots on the leaves before the rot appeared on the grape?

Mr. Johnson. My attention has not been attracted to it, I have not observed it.

Mr. Campbell. I supposed until last year that they either came together, or the spots came afterward. Some vines last year had these spots on quite early, before any rot appeared on the grape. I applied the blue-water remedy, and all through the season there was no rot on the vines to which I applied this to the leaves. Now, this is the only experience I have had, and I have never known vines that had these spots on the leaves that did not also have the rot. I am in hopes this is valuable information in the right direction, but it is only one year's experience.

Secretary Hobbs. The advantage of this information, as I understand it, is, that if the spots appear first on the foliage we can prevent the rot by applying some of these remedies.

Mr. Campbell. That is my idea. I think it is important that we should apply some of these remedies that have been successful, to the foliage early in the season, and if these vines escape rot we have found a remedy. Mr. ——— claims to have been very successful keeping out rot by spreading common copperas under the vines, and his testimony has been quite satisfactory. He thinks it is a remedy.

Benj. Strattan. Was the copperas pulverized?

Mr. Kingsbury. I do not know whether it was pulverized or not; probably not very fine.

Dr. Furnas. Report says it was just thrown under as gotten in market, and then rain water poured on it.

Mr. Kingsbury. He thought, as he did it early, he destroyed the germs from these rotten grapes that have been left from the year before. Now, if this copperas is a remedy at all, it is a remedy in this way.

Dr. Furnas. That is a cheap remedy, in the reach of us all, and I have a notion to try it. How is the Niagara coming on?

Mr. Johnson. First rate; best white grape we grow.

Isham Sedgwick, Richmond. I notice some signs of rot on my Niagara.

Thomas Morris, Richmond. I was going to remark that the Brighton has no rot at all. The Lady Washington is the worst; there is some on the Worden, and none on the Ives.

Mr. Sedgwick. Last year I had a very troublesome attack of the birds on the grapes, and I found the only way to get away with them was to get mosquito bar and hang on the trellis.

Benj. Strattan. I would like to make a remark in regard to the sacking. It pays me so well that I am going to put on 500 in my little patch, and I use a little sulphur and a little fine dry lime, so that I can sprinkle a little into each sack. I noticed a little fungus among the Prentice, and on that grape particularly I put the sulphur and lime in the sacks. There is no rot on any but the Prentice. I use a common paper sack, No. 1 Anchor, which was said to be the best. With a little experience, I find I can put on two or three where I could one before.

Mr. Sedgwick. Rot appears on the Duchess, Niagara, and on one we call Naomi; nowhere else, with me.

Franklin Taylor, Indianapolis. I have followed sacking my grapes for some three years past, and there has not been any rot or other injury. I put on some 3,000 sacks last year, and did not have a single rotten grape. I believe I had a few that were not sacked, but it never got inside the sacks. I have a number of neighbors who have a great many bees, and when the grapes are very ripe they are attacked by the bees. Wasps are very bad, but they do not get into the sacks. We use the No. 2 Manilla sacks. They come very cheap, and we put them on at our leisure. I merely put the sacks over the bunches, bend over the top, and pin with a single pin, and I can sack 2,000 in a short time.

Mr. Ohmer. I would suggest that it is a very good plan to cut off a little corner of the sack to let the water out.

President. Did any body ever sack under favorable circumstances and meet with failure?

Mr. Kingsbury. I sacked a little too late once, and lost my labor.

Mr. Ohmer. It is said it is too much expense to sack grapes when raised in large quantities for market. A gentleman told me he had, I think, three acres. Said he sacked about half when some other work came up, and the balance were not sacked. He said it would have paid him at the rate of \$100 per day to have sacked them.

President. There are no grapes sacked on my premises. Would it save my grapes to sack them now?

Mr. Campbell. I think it would be successful.

Secretary Hobbs. There is this idea connected with sacking late: It may prevent the proper degree of moisture for the germination of the rot spores.

Mr. Campbell. I am greatly in favor of sacking. It is worthy of trial. It does not cost more than a half cent to a cent a pound, and it protects from rot. If you are going to sack, cut off all the imperfect bunches, and sack the large ones. I will tell a little of my experience with the Delaware grape. I once had a very fine vine with about 400 bunches of grapes. I cut out 300 of them, and have no doubt the 100 were a great deal more valuable than the 300. I took some of them to Boston at the time, and I now have a silver medal for just that little lot.

Benj. Strattan. I am very glad to hear those remarks, for it is my experience exactly. I never allow more than two bunches on a stem, and many times not more than one.

GOOSEBERRIES.

E. J. Howland, Indianapolis. Who has grown the Mountain Seedling?

E. Y. Teas. I have grown it twenty-five years or more. Some think it is altogether the best gooseberry, and some do not like it at all. It is exceedingly variable in size, some large and some very small on the same plant. It is not near so good as some of the others; not so good flavored as the Downing, and not nearly as good as the Early Orange.

Messrs. Campbell, Hobbs and Ohmer also spoke unfavorably of the Mountain Seedling.

Thos. Morris. So far as I have tried it, I like the Industry. The Early Orange is the best flavored I have. It is very productive. The Downing is a great bearer.

E. Y. Teas. I think the Early Orange is the best I have ever seen. It is wonderfully productive, very small, very early and very good. The only objection is its small size. The Early Hudson, which was sent out by Mr. Hooker just before he died, ten years ago, is very large and very good. It has foreign blood in it. It grows well with me.

President. The trouble with those of foreign blood is that they mildew.

Secretary Hobbs. The Downing is decidedly the best gooseberry that we have grown. We have the Haughton, Smith's Improved and Industry. The Industry is deficient in foliage. It appears our suns are too hot for it, and the foliage drops off before the fruit matures. With us, the Downing is a very thrifty, strong growing plant, fruits abundantly, and the fruit is large, tender, and of good quality, and is excellent for canning. We are very fond of canned gooseberries. The Haughton is the most productive of anything we have. Mr. Haines, of Delphi, has the Champion, which he obtained from Washington Territory. He has 800 two-year-old plants, and, after growing one year on his place, this year produced nearly one quart to the plant. They are larger than the Haughton, lighter color, good quality. The branches are a little heavier, and the foliage thicker, and he says it carries its foliage well through the season.

Mr. Ohmer. The Downing grows very well with me on my grounds.

Mr. Campbell. All things considered, the Downing is the best.

E. Y. Teas. The Champion is certainly very promising.

CURRENTS.

Secretary Hobbs. We have not considered currants yet, if there is time it would be well to introduce that topic.

Mr. Ohmer. I have ceased to grow them at all, except for our own use, but if I had choice, I would give the preference to the old Red Dutch. I have tried the Victory, and nearly all varieties.

Mr. Howland. Of all the varieties I have tried, I would give the preference to the Versailles and Knight's Sweet Red. I never could raise the Fay.

Mr. President. That is a little my experience. I have done better with the old Red Dutch than with all the rest together. I have tried the Reds and White Grape, and threw them all away, and now go back to the old Red Dutch again. There is a currant called the Glory; if I wanted a sweet currant of any variety, I might try that. It is very productive, but small. The White Dutch and White Grape we have thrown away, and those black currants, the English, etc., we can't do anything with.

Prof. Troop. A few years ago, I got some of the Wilder currants. They were as well loaded as any currant I had this year. But all things considered, the Red Dutch was ahead of them all.

Secretary Hobbs. I was up at Delphi sometime ago, and visited the grounds of A. F. Martain & Sons. The Fay does remarkably well with them. They were bearing very full; bunches and berry large. They think so much of it that they are thinking of planting ten acres, or about 8,000 plants. They already have some 3,000 plants growing.

Samson Boone. I would like to know something about the Crandall currant.

Secretary Hobbs. It is a new black variety of which very little is yet known.

Mr. Stevens, of the Wayne County Association, then invited the company to dinner, and the meeting adjourned to a bounteous, tempting dinner near by.

It has never been our pleasure to sit down to a more sumptuous and tastefully arranged picnic dinner. All praise to the good cooking and taste of the ladies of the Wayne County Society. Two hundred persons ate at the first table and probably as many more at the second.

AFTERNOON SESSION.

About 2 o'clock President Stevens, of the Wayne County Society, called it to order and it held its regular monthly meeting. The chief feature of this was the paper by Mr. J. G. Kingsbury, of the Indiana Farmer, on "Insects Destructive to Fruits and Vegetables." The paper treated particularly of the insects that infest apple trees, plums, and so on. It did not, as might have been expected, denounce these insects as an unqualified nuisance and evil. Instead Mr. Kingsbury proceeded to show that the horticulturist would be a very unenergetic and unambitious being if he had no insects to contend with. "Verily the bug," said he, "is a useful member of society. He keeps us horticulturists up and going, and teaches us that if we will have what our appetites crave most ardently and will surround ourselves with abundance we must work for it, in other words, pay what it costs, *i. e.*, be honest and industrious. There is a certain combativeness and fierceness in us, and it is well to expend this on the bugs, which indicates another moral value there is in the bugs." This said, Mr. Kingsbury proceeded to deal with the various troublesome insects seriatim, and his main conclusion was that, while individual effort, if it be diligent and intelligent, could keep the insects from becoming seriously destructive; but the aid of legislation was much needed to keep them down generally and permanently. Legislation of the needful sort is now in force in California.

We regret we can only give a brief summary of Mr. K.'s interesting paper.

Mr. Johnson. You see he always fires a shot at the English sparrow and then runs. But I do not care to discuss that question now, because it would not be interesting. But I think we should be careful not to inculcate anything injurious and there was one thing he dropped which might be so to the public. He said to use one-half pound of Paris green to a barrel of water. He is my neighbor, and he got me into a scrape by telling me that. I used half a pound and it was too much; one-fourth of a pound is enough. Another thing he said, that Paris green is the only remedy or most effective remedy for borers.

Mr. Kingsbury. No, I did not say that.

Mr. Johnson. I must have misunderstood. But while on this subject I want to say that we have an article in the seed and drug stores of Indianapolis they call slug shot, which is better than anything I have ever used as a bug remedy, and it only costs five cents per pound. It is not only good for the potato bug, but for all other bugs. I made but one application and that drove all the bugs away. Soon after there came a rain and washed it off, and I supposed I would have to apply it again, but I did not. I put it into thin muslin sacks and powdered it over the vines just a little when the dew is on.

Dr. Furnas. I made a note when he was speaking of the borer. There are two classes of borers, and he spoke of their working near the ground. Now, if I am rightly informed, the variety of borer that works near the ground is a round-headed borer, and that variety is not the variety that folks in Indiana and in our county are troubled with. I don't believe there is any of that variety in Hendricks County. But it is the flat-headed borer we have to contend with. The round-headed takes healthy trees and the flat-headed unhealthy trees. If you will just go round your trees with an old rag or piece of a stocking and rub it up and down two or three times a year you will crush the borer.

Mr. Ohmer. A little soft soap will help it. I wish to emphasize Mr. Johnson's remarks about the strength of the poison water to destroy worms that eat the foliage of trees. That certainly is too strong. It is very well for you to remember this. I tried it, and wherever it was applied to my apple trees it almost entirely burned the foliage. I then took six ounces of London Purple to the fifty-gallon barrel, and the foliage was not injured in the least; but five ounces is fully as good, and possibly four ounces would be sufficient, but do not use one-half pound to fifty gallons under any consideration. We have not had this year many worms that were destructive, because we had very few apples for them to operate upon last year. I have no doubt next year you can look out for a greater number of these insects that eat the foliage. By spraying, you destroy all the insects. I would highly recommend every man who has an apple tree to use the spray. Some of them are cheap, some expensive. It is very little work and will pay you well for your trouble.

Dr. Furnas. I noticed the circular that Commissioner Coleman sent out, he recommended one-fourth of a pound to a barrel, and I noticed afterwards he sent out some circulars of caution, fearing it was too strong. You can make the experiment if you will try it in a small way; if you see the leaves curl a little it is too strong. London Purple is much better than Paris Green.

Secretary Hobbs. There is one other point that has not been brought out. Paris Green and London Purple are not soluble in water, and it is very important that the water be stirred continually while being applied to the trees. It will settle to the bottom, and when you put the last on it is too strong, while the first is too weak.

Mr. Johnson. I desire to present a matter to the members alone of the Indiana Horticultural Society, in the shape of two resolutions.

Resolved, That the thanks of the Indiana Horticultural Society be and are hereby tendered to John F. Miller for his invitation to hold its mid-summer meeting at his beautiful and attractive home.

Resolved, second, That the thanks of this society are also tendered to the members of the Wayne County Society for its generous hospitality, for the many attractions it has laid before us, the beautiful flowers, and especially for the very tasteful repast so bountifully prepared by its ladies.

A recitation by Miss Sedgwick followed, entitled, "The Inventor's Wife," which was well rendered and decidedly humorous.

Mr. J. L. Yaryan, in response to Mr. Johnson, said:

Gentlemen of the Horticultural Society:

Col. Miller requests me to say that he fully appreciates your resolution of thanks for the hospitalities of the day, and that it has given him great pleasure to have you here. It seems to me eminently fit, that a distinguished representative of the railroad interests of this country, should entertain socially the representatives of the agricultural and horticultural interests of this State. Capital and labor are no more dependent upon each other than are these two interests. Destroy railroads and the value of farming lands would depreciate one-half, and the products of the farm to the value of local consumption. And without the products of the farm, the transportation system could not be sustained. The friction, in the past, between the common carrier and the producer, when railroading was in its infancy, has passed away. The rights of each interest have been defined, and better understood, and constant commercial intercourse has made a business friendship that is strengthened each year. Fifty years ago, the average wagon load of wheat of 2,500 pounds, hauled by the farmer 100 miles, would have been consumed by the expense of transportation. To-day the Pennsylvania Railroad Company will haul that amount of wheat, the same distance, for about the price paid for a day's labor on the farm. We place our lives in the care of railroad companies, why should we not entrust them with our business, with full confidence in their integrity? The ability to care for the track, furnish speedy transportation to freight, and safe transit to passengers, is equal to that required in any other business or profession. You can place a child in care of their agents at Richmond, to be carried to New York, and on schedule time it will be landed in their station, in Jersey City, safe and comfortable, as if the mother had held it on her lap. Railroads are the great civilizers of the age, and should be on friendly terms with agriculture, the foundation of all prosperity.

There is another thing that I have noticed to-day, and in fact on all occasions when this society has its meetings, and that is that your wives and daughters are taken into your councils. You may look back over your lives, and you will find

that in the degree you have advised with them, and treated them as companions and peers, in that degree has been your individual prosperity. Among the many advancements you have made in your lives and business, since your fathers put you in charge of affairs, the admission of woman's worth is the noblest and the best. To treat children as young ladies and gentlemen is an idea of the present. The wife and mother has been dignified by business confidence, and appreciated in council and at the fireside in these later days, as she never was before. Our boasted civilization will have some foundation in fact, when the boy on the farm becomes too much of a gentleman to allow his mother to dig a potato, or cut a stick of wood to cook his dinner. There is one more step to take in the direction of her complete recognition, and that is, give her the privilege of the ballot. It's coming gentlemen, and the oldest of you will live to see her life rounded up, to full measure, by the addition of this right. And why not? The freedom of thought and conduct is allowed every human being under our flag. Except as to her, there is no disability. One chain fetters her complete freedom; it may be a glittering one of silver, but in this age, it is the fetter, not the glitter that attracts attention.

Every man in the full enjoyment of his civil, religious and political rights should be willing for every other human being to enjoy what he does, without regard to sex, color or previous condition. That is American, and mighty near gospel. What are you afraid of, gentlemen? That she will not vote right? That idea would do to go along with the time when your grandfathers hung a gourd filled with soft soap on the water trough to assist in the daily ablutions. Do you tell me that your wife—gentle, refined, educated, the mother of your children, the Mecca toward which you turn your steps in trouble and grief, who holds in trust all that is sacred and of value to you this side the grave—is not fit, is not a proper person to exercise this earliest and simplest form of political preference, when the sacred right is freely accorded and guaranteed to your stable boy, who grooms your horse, and signs his name by an X?

Do you doubt her influence for good? You granted this right to four million human beings who had been slaves one hundred years, who knew nothing of the science of government, were without citizenship, and had no more standing in the social world than the mules they worked. Woman would not have voted for the law nor given their political influence in favor of the law that existed in Indiana thirty years ago prohibiting a man, woman or child with a black skin from immigrating to this State. Nor would she have made by her ballot bloodhounds of her sons, to catch these human beings fleeing across her domain to liberty. Her vote would not be cast in favor of the saloon with husband and child by her side. Would her vote have been against the prosecution of the last war? Why, if it had not been for woman's devotion and loyalty, and her influence upon the volunteer, the struggle to perpetuate the Republic would have failed. The sweetheart sent her lover, the wife her husband and sons, and followed their fortunes in the field. No groan so faint but caught her ear in hospital or battle. Gentlemen, she has your stomach and pocket-book under her full control now, and there is nothing left for you to stand on but your pride and stubbornness and the fear you will cease to be boss. The old prejudices are dissolving under the light and heat of the gospel of common sense and justice, and the process will continue until the mother

will go to the polls leaning on the arm of her son or husband, as they would to church, and place their ballots side by side. We are specially proud of our commonwealth to-day. Since 1816, when she entered the sisterhood of States, Indiana has been rapidly coming into prominence. There were many difficulties to overcome. Your fathers and some of you had to fight Indians and malaria, and the forest, ignorance, and superstition for many years. But the reward for toil and danger and difficulties met and defeated has come. The State to-day is first in wheat production and third in general agricultural resources. Up to 1860 her population had a national reputation for lack of culture. Not only that, but a misunderstood military order, in time of battle on the field of Buena Vista, gave a regiment of her sons a reputation for lack of good fighting qualities; hard to bear, because unjust and false.

But the Indian fell back at the touch of civilization. The fever-breeding swamps are drained. The lack of education, so keenly felt by these grand old pioneers, caused them to provide against this want in future generations, by making wise and generous provision for the accumulation of a common school fund. To-day every child within the State, white or black, male or female, can secure, without cost, a better education than George III had, when his kingly hand was shaken from the Republic; and school houses dot every township in every county in the State, supported by a fund larger than any of the States save one—New York.

A net work of gravel and iron roads has spread over her surface, until a map shows her bosom veined as the skin of a thoroughbred horse, heated in the race. Oliver Morton placed 200,000 of her sons in the field, properly officered and equipped, and in four years they had not only blotted out the stain of Buena Vista and left their bones on every battle field of the rebellion, but became such soldiers as Cæsar dreamed of.

The crowning acknowledgment of her importance as a State came when the assembled representatives of the States and Territories turned to her for a leader for the whole people, and dropped the chaplet of preference on the brow of a citizen of Indiana. It is State pride that makes my heart beat quicker when I mention the name of Harrison, and now, when they ask me where I hail from I tell them Indiana, and tip-toe when I say it.

President Stevens. We have with us quite a number of distinguished friends from Indiana and Ohio, and the time is yours. Anything you have to say will be gladly received.

Mr. Kingsbury. Call for the question drawer.

Question. What is the best tool to use in digging Irish potatoes?

Daniel Bulla. A Dutchman, a fork and a hoe.

Mr. Clark, of Ohio, expressed his appreciation of the invitation which had been extended to them across the line on this occasion, and of the pleasures set before them, and hoped they would be able to return them sometime with interest.

President Stevens. It affords me much pleasure to say that the invitation we have extended to-day is free and courteous, and without any want of returns. We extend to you a Wayne County welcome—a John F. Miller welcome. You are one of us, a part of us.

Next on the programme was a recitation by Ida Hatfield, "The Russian Slave," which was well recited.

Dr. Furnas. If there is nothing more, I want to say a word in the interest of the Indiana Horticultural Society. I feel that Indiana has not done her whole duty in reference to this Society. Our neighbors in Ohio, Illinois and Michigan are doing more than we are. They have more money and more members belonging to their societies. Now we passed this kind of a resolution at our last meeting: That the county bringing the most members shall have the banner for the ensuing year. We want you to try for it, and would like to see a great number of Wayne County folks at our next meeting in December. Ask them to assist us in our preparations. Your Secretary and myself signed a private note a few days ago to pay for our printing. We must have money and we want help.

President Stevens. We have a question here: Is there any law to protect fruit growers from the depredations of bees? I know of no law. I know of no depredations done to the fruit grower. I know they are useful in the raspberry business, also in the apple and plum business.

Dr. Furnas. I once gathered quite a number of drawers of Delaware grapes, intending to go to market, but something happened, and I could not go, and set them down in the cellar close to the door. I went to get them late in the afternoon and the bees had riddled them. I don't believe anything else touched them.

John Conley. I had a little vineyard, and I tried this experiment: I took twenty-four quart cans and filled them half full of sweetened water. The next day I got them half full of wasps or yellow jackets, that cut the skin, and then the bees suck the honey.

Mr. Buel, Richmond. I think I speak the sentiment of everybody when I say that I have spent a pleasant day, and we are indebted to Col. Miller and his family, but I believe in "giving honor to whom honor is due," and there is a gentleman who is entitled to much credit for the success of this meeting, and I move a vote of thanks be given to the President of the Wayne County Agricultural and Horticultural Society, for his untiring zeal which is manifested in bringing together so many distinguished persons on this occasion, and I hope everybody will give a vote of thanks to Jesse Stevens, for making the meeting the grand success it is to-day. The motion was seconded and a vote of thanks given to Jesse Stevens.

I thank you for the compliment, but feel that I have only discharged my duties. (Jos. Ratliff, Benj. Stratton, and the good ladies should have been included in the vote of thanks.—Secretary.)

There may be subjects that we want to discuss that were left this morning, and I am authorized to state that through the kindness of our host, he has invited a party of friends, who will be here soon, to add to our entertainment. We are trying to entertain you as best we can until Col. Miller's friends arrive.

I have the pleasure of introducing to you Miss Florence Wallace, of this city, who will recite to you "The Log Cabin in the Clearing." The piece was well recited, and pictured vividly early days in Indiana.

Attention was called to the cherries on exhibition.

Mr. Clark, of Ohio. They are the Montmorency cherry, which bore at two years old. Two years ago I had as good a crop as I ever saw on small trees. This

year there is a very fair crop, as you can see by the specimen. From the experience I have had I think it is going to be one of the finest cherries ever introduced into this country. Think it will be a very profitable cherry to grow in this country. It is a very hardy tree, and the fruit has always been perfect with me, and quite large."

G. W. Campbell, Ohio. Have not had any experience with it. There are two kinds of Montmorency cherries, the small and the large, which are exhibited here.

Secretary Hobbs. The variety on exhibition here is called Montmorency, large fruited, introduced from France. We have been growing the trees for some years. Wherever it has fruited they give it as good a reputation as Mr. Clark. It ripens after the Early May, is productive, and very hardy. The Ordinary is smaller in size. Patrick Barry says they are both good cherries.

In our discussion this morning, we attempted to go over the fruit lists and discuss the varieties we saw yesterday. We had not time to complete this list. The apple was given very little attention, and the plum none at all. I think there is no question but that the plum is going to be one of the most interesting fruits that we can consider, from the fact that we have made almost universal failure in the past, and we seem to be now on the verge of success. I think there is no doubt about this, and that our success in the west and northwest lies in the line of varieties that are indigenous to this country. There is the Chickasaw type of the south and the Americanus type of the north, and when crossed they are giving us some very fine plums. There are some varieties of the native plums which seem to resist the attacks of the curculio much better than any of the foreign sorts. They have the power to throw out the egg, or prevent its hatching, so that the plum is not troubled with the worm. And there is another fact in regard to the plum that is not generally known, and that is that many of the varieties we have attempted to cultivate here, such as the Wild Goose, have proven a failure in many localities from the fact that in this latitude it rarely fertilizes itself, but wants other varieties that are rich with pollen to fertilize it. Hence, to be sure of plums, we want to plant the best native varieties we can get, and plant close together, and mix them up. It has also been discovered in the last year or two that an application of Paris Green will also kill the curculio. Apply when the curculio appear early in spring. The Hawkeye, Wolf and others of the Americanus type are promising.

In our part of the State the Robinson plum is proving to be the most productive and reliable of the natives so far. It is medium size, and cooks very well, better than the Wild Goose. It is very reliable as a producer, bears every year, and abundantly. The Potawatomie, from Iowa, is a very good plum, I think. We had specimens last year that had been stung by the curculio. We did not find a worm in the whole lot; showing that the plum is capable of resisting the attacks of the curculio. When cooked was entirely free from astringency.

A vote of thanks was extended to Mr. Kingsbury for his excellent paper; also to the young ladies for their recitations.

Professor Troop. Gentlemen, as many of you know, the State Experimental Station, that was contemplated in the Hatch bill recently passed by Congress, and

which appropriated money for the establishment of this station, has been established in this State, and located at Purdue University. I simply have to do with horticultural, and shall confine my remarks to that. We have only just started, and so can give but few results as yet. We have just now about 70 varieties of strawberries, 25 or 30 raspberries and gooseberries, about the same number of grapes. We have about 400 trees, apples, plums, pears and cherries now growing. These have been put out about two years. The Robinson plum, Golden Beauty and several others are bearing quite full this year; there are three varieties of apples that are also bearing this year. Nearly all our orchard fruits are of recent variety. We are keeping careful account of the merits and demerits of each, so we can report as to their reliability; and I might say here, that if any one has any new varieties that they have been originating we would be glad to get them, and test and report upon them. Anything sent to us for this purpose is kept under restriction, and not sent out unless we are authorized to do so. We would be glad to get anything of this kind. Do not know that I have anything else to say, only that I hope we shall be able to secure this summer meeting next year, when we will be in running order, and hope we shall have something to show you.

Joseph Ratcliff. As the business of this meeting has been gone through, and there are some who would be glad to look over these grounds, I move that we adjourn to meet at Wm. Parry's on Saturday, August 11.

Meeting adjourned.

When the meeting adjourned there were probably 500 to 800 persons on the grounds.

We were entertained for a time with some excellent singing by the Richmond Glee Club, after which the company strolled over the picturesque and well kept grounds of our host. We have seen no private grounds in the State that are equal to these in extent, variety of scenery, interest and beauty. The site is naturally picturesque and inviting. Nature has been allowed her own way as much as possible, with touches of art here and there to add to the comfort and beauty of the place. Here is the handsome stone residence of the proprietor, with all modern improvements, almost hid among the foliage of trees and vines. In front of the building is an open lawn with its carpet of green, with its drives and walks among beds of gorgeous foliage plants and beautiful flowers. These are skirted with clumps of shrubs, trees and vines, with inviting winding paths that lead through a maze of foliage and flowers to shady nooks and rustic seats, where you may sit and drink in the beauty and perfume of the Eden about you. Here is the forest primeval, the tangle of vine and bush, and here the primitive log cabin with clapboard roof and weight poles, puncheon floor, capacious fire-place and stick chimney, crane, kettle and all. One window, one door with the latch-string out, rain-trough, ash-hopper, the well, oaken bucket and sweep, and other furniture of earlier times. There is a thickly shaded bluff running east and west through the place, from which cool springs of water run into numerous pools, where you may see the carp and handsome trout in their various stages of development.

It was amid these pleasant and beautiful surroundings that the Indiana Horticultural Society held its first summer meeting, which was pronounced by all to be an enjoyable and profitable occasion.

The following letter from Secretary Ragan was read by the Secretary :

GREENCASTLE, IND., July 9, 1888.

C. M. Hobbs, Secretary Indiana Horticultural Society, Bridgeport, Indiana :

MY DEAR SIR—Your circular announcing the meeting at Richmond just received. It is with deep regret that I must forego the pleasure of meeting with the society on this occasion. Duties of a character which I cannot overcome alone could cause me to miss this meeting. Thos. B. Morris, John C. and E. Y. Teas, Calvin Fletcher, I. D. G. Nelson, Gen. A. Stone and the writer are all that are certainly left of the charter members of Indiana Horticultural Society, and of those only T. R. Morris, J. C. Teas, C. Fletcher and the writer were present at the preliminary meeting on the evening of October 19, 1860, when the society was organized. Of the meetings of the society which have since occurred, it has been my great good fortune to have attended all save two, one regular and one special; if I mistake not, a record unequalled for promptness by that of any other member. But I do not boast of this, only the more regretting my present misfortune in being compelled to miss this meeting.

It is difficult to estimate the value of the good work of the Indiana Horticultural Society. Suffice it to say that every nook and corner of the State bears testimony to this; every orchard and every garden, aye! every home bears the good fruit born of her benign influence. There are none of the clarion notes of the trumpet in her ways, but rather the "still small voice," that would point with modest pride to the offspring of her labors.

Present my compliments and hearty greetings to the assembled members and friends at Richmond, and with the hope that the meeting will prove successful in all particulars, I am, with great respect,

W. H. RAGAN.

STATE FAIR MEETING HELD IN THE AGRICULTURAL AND HORTICULTURAL ROOMS OF THE STATE HOUSE ON THE EVENING OF SEPT. 19, 1888.

The meeting convened in accordance with the following announcement:

CALLED MEETING OF THE INDIANA HORTICULTURAL SOCIETY.

There will be a meeting of the State Horticultural Society on Wednesday evening, Sept. 19, at our room No. 11 in the State House. The State fair will be in progress at this time. This, with the reduced railroad rates and the fine horticultural exhibit that is expected at the fair, should bring many horticulturalists together. It will be of interest and profit for these persons to meet, bringing with them new, rare, unnamed or otherwise interesting fruits, etc. The discussions upon these and the State fair exhibit will be of value to all. There are many localities where the nomenclature is very imperfect. This meeting will afford an excellent

opportunity for identifying varieties and correcting names, as there will be in attendance some of the best informed horticulturalists in the country. Send by mail or express, if you can not bring, all articles that will be of interest to the meeting, to the Secretary, C. M. Hobbs, Room 11, State House, Indianapolis.

C. M. HOBBS, *Secretary.*

ALLEN FURNAS, *President.*

The meeting was reasonably well attended, interesting and profitable. The fruit display was good as will be seen by the report of the fruit committee.

The President, Allen Furnas, called the society to order and spoke as follows:

We have found in looking around that to keep posted on fruit we need to look after it at this time of the year. Those of us who went to Richmond thought that we had a very profitable and interesting meeting; but while we have done this much others are doing more. Ohio holds three meetings of its State society each year for investigating all the fruits.

We have called this meeting for consultation; not for anybody to make a big speech, but to look after the fruits that would get away before the winter season.

The nomenclature of summer fruits is more deficient than of winter varieties, for we could bring together the winter fruits and get posted on them; so we are here to-night for the purpose of bringing up this part of the work.

New specimens are found scattered over the State that are doing well; we want to gather such facts as these for our next annual report, the same as at the summer meeting at Richmond.

Daniel Cox. I move that a committee of three be appointed to examine the specimens of fruit brought here and present a report.

The motion was seconded.

The Secretary. I would suggest that four or six be appointed rather than three, as it is evident that a number of varieties will be difficult to name, and if there are four or five it will facilitate the naming materially.

The motion was amended to read "committee of five" instead of "committee of three," and was then carried.

President. We have been talking this matter over and have a list of names suggested, viz.: Joseph Ratcliff, James Sanders, Mr. Hays, Prof. J. Troop, J. C. Connett.

Mr. Connett's name was afterward added as Mr. Hayes was not present.

Isham Sedgwick. If arrangements are not already made for exhibiting the fruit we have here, I move that it be taken to the State Fair as early to-morrow morning as practicable.

The motion was carried, and the Secretary was directed to see that the fruit was at the Fair Grounds early next morning.

Sylvester Johnson. I suppose it will have to be packed in a box and an express wagon hired to haul it; and I would suggest that the owners help see to the packing. I suppose the Society will pay whatever expense there may be. I would like to have this exhibited as coming from the State Horticultural Society. Some are saying that the State Horticultural Society is not doing anything for the State Fair. We have met this by saying that we have no money and are in debt; but

what is done in this voluntary way will cost but little and will show some of our work. There should be somebody to attend to exhibiting the fruit after it is there.

Isham Sedgwick. I suggest that each one pack his own fruit this evening, and that a committee take charge of it in the morning.

Benjamin Stratton. That is just my view—that it should go from this Society.

Sylvester Johnson. It is too late now for premiums, and so I want it to go from the Society.

The President. Those who have fruit here had better pack it to-night and we will have it hauled up.

The following gentlemen were appointed a committee to have charge of the exhibit, viz.: Isham Sedgwick, J. F. Coffin (of Hancock), Benjamin Stratton.

The President. By way of introducing the matter to-night I will speak of this apple from Jacob Hampton's orchard; it is called the English Hagloe. It has been a very profitable apple to him; he reports 125 bushels off of eight trees. It is not generally known—an open-topped tree—and just the thing to make money on in some places. In villages, such as the one where I live, I can not make money off anything like this, as it runs against the Maiden's Blush.

The Secretary. He says it is more sought after than the Maiden's Blush.

The President. Fruit does not do equally well in different locations. We noticed at Richmond a *very nice* cherry—the large Montmorency. Now, don't everybody run after the Montmorency. It may not do well on every soil, but we want to try it. Some of us while there saw a very large dewberry—I mustn't say just how large; it was *immense*. Many will tell about the Lucretia, having tried it on low, rich ground, and say it is not a success. Where we saw it it was on a bluff, rather poor sugar tree land. Down in low, wet ground I am afraid it would not do so well. We must get posted on the different soils. It used to be my habit, when in the nursery business, to advise a man having a low swag of land to put Clayton on it; that would do best there. A man once came twenty-five or thirty miles to get trees, and so I recommended Clayton to him for low ground. Jim Little was standing near; had not said anything till then. He took his pipe out of his mouth and said, as only he could, "Stranger, I've knowed all about that apple, and it'll succeed where willows drowned out." That was putting it rather strong. But we must not think that any fruit will be universally successful; we must get facts on the subject gathered up, and so make less risk in planting. I know a man who would not buy home-grown trees, who sent to New York and got Baldwin and other varieties that do not do well, when he could have got at a home nursery varieties that would do well. Friend Coffin has a new grape, a seedling of the Delaware. It has not been developed, but if it succeeds as it promises it will almost revolutionize grape growing. He lives in rather an elevated place. I say this in the way of introducing it.

Sylvester Johnson. I would like to know how the Hagloe has behaved before this; has it been so productive?

Benj. Stratton. That is the report.

The President. I can answer that. When we saw them it was just loaded; it is reported to be almost universally so. I think almost every year.

Benj. Stratton. We seldom find a tree that bears so full every year. This one bears every year, but perhaps not always so full. When there is so much fruit, wood is not produced to bear another full crop the next season, as a general thing,

The President. Mr. Hampton, is the Hagloe an annual or every-other-year bearer?

Mr. Hampton. It doesn't come into bearing so soon as some others. It is a sure crop every other year, but no year is it without fruit on the tree—bears some every year; it bears clear out to the end of the twig. It is an August apple. Many to whom I had furnished them expressed regret that they gave out so soon. They found a readier sale than the Maiden's Blush.

In answer to questions from different members, Mr. Hampton stated further concerning his Hagloe trees:

"They were planted five or six years before they bore anything worth counting on; they are eighteen years old now. As to their hardiness, all the other trees in the row were killed, while of these not a twig was hurt.

The President. It need not be against the apple because of its not bearing every year, because, as referred to by Mr. Stratton, spurs and buds must be made for the next year crop; that is the theory, that one season the tree is making the apples for the next year. Some varieties bear very evenly every year, but generally it is every other year.

Sylvester Johnson. I would like to have Mr. Coffin tell about his grape.

Mr. Coffin. The grape is a seedling of the Delaware. It was planted accidentally. I gave some Delaware grapes to my wife; she saved the seed and threw them on a flower-bed, remarking, that perhaps they would come up. I found the plant there the next spring, took care of it, and the second year it bore one bunch. I laid it down the two first seasons, but after that I wanted to see whether it was hardy, and so let it grow standing out without any protection. Have had it growing for fifteen years, one vine on the house and one on a trellis, and it has proved very hardy. I have brought it up to know what it is.

The President. Bring some samples of the grape in. Notice, too, its leaf. It is very leathery, just what we want to stand our summers.

Benj. Stratton. I have here a seedling from the Concord, which is a better grape, and has finer bunches. Perhaps that may be because it is a younger vine. It almost makes me think of the Worden, it is nearly as large as the Worden. It has the Concord taste, but it looks to me that it is an improvement on the Concord. It is very hardy.

Specimens of the grapes were brought in. Speaking of the seedling described by Mr. Coffin, Benjamin Stratton said it is evidently a seedling of the Delaware. It is like it, but has the Catawba flavor.

The President. But it has not the Delaware leaf.

J. A. Burton. When we were at Richmond we had something about a method of transplanting that I can illustrate now, it will soon supersede potting. It is not my invention, but of Mr. A. I. Root, of Medina, Ohio. I have here cylinders of different sizes. The one four and one-half inches in diameter I use for strawberry plants. Put it over the plant and press down about two-thirds of its length, then take it up with the plant and dirt remaining inside and set it down where you

want the plant to be, fill dirt around the outside to about the level of that inside, fill up with water inside, and then after a little the cylinder can be lifted out, leaving the plant. I have moved plants in July in this way and none wilted. Cabbage, tomato, cucumber plants or any others can be transplanted in this way. The sizes I have here are $4\frac{1}{2}$, 3, $2\frac{1}{2}$ and 2 inches in diameter. For general use they might be a little larger than $4\frac{1}{2}$ inches. I used an old bucket, eleven inches in diameter, in transplanting a large gooseberry bush. I gathered the limbs up together, put the bucket down over, and by digging some removed it. All the berries ripened, never any of the leaves wilted.

The President. I will call attention to Benj. Stratton's grape (exhibiting specimens).

Benj. Stratton. It ripens fully as early as the Concord; not as early as the Worden.

The President. I think it will not be necessary to test it. As far as quality is concerned it is the Concord.

Samuel Thatcher was called on to tell of his seedling grape, and said: I can't give very much of a history of it. I do not know exactly what it is a seedling of. I have had seedlings of Niagara and of Concord; have raised a great many seedlings, and fruited perhaps a dozen. Among them was this one. It is a very strong grower and appears to be thoroughly hardy, as it has stood on trellis. It is now a little past its season. It has a large, very thick leaf, and bears a tolerably good crop. The grapes were not sacked; I thought it did more harm than good to sack grapes. Lady Washington ripened poorly when sacked.

The President. I made a proposition to Mr. Kingsbury when we were at Richmond that I would sack one hundred bunches if he would. What is the result?

J. G. Kingsbury. I have not yet taken the sacks off.

Referring to Mr. Thatcher's grape the President said: This is a good grape, better than the Pocklington.

The Secretary. Or the Niagara.

Benj. Stratton. I spoke at Richmond of having sacked five hundred bunches. All that I have brought here were in sacks. The Prentiss shows some signs of mildew; all the others are perfect. Late grapes do not ripen as well in sacks as without. But I would have had no Hartford if I had not sacked them. The Catawba don't ripen as well out as in.

Isham Sedgewick. I have two grapes that are new, I think, to most of you. I got them of Geo. W. Campbell, of Ohio. One is the Faith. It is usually a little larger than the Delaware, but this year part of the grapes were killed out by frost, perhaps one-third of the grapes on a bunch. It is a rampant grower; I know of none more so. I set a vine of this variety in the spring of 1886, and this year it bore 560 bunches. It has this peculiarity: It ripened last year about August 7th, this year August 10th, and you see how they are now. They will stay on the vine until frost, and dry, not rot nor drop off. They have hung on until October.

E. A. Eickhoff. I have brought a sample of an apple I have called Clayton; think not the name it originally had. So far as I know it was a seedling, and was found about the Johnson County line, near Edinburgh. It was propagated by Mr.

Schnaff, and then by Mr. Furnas. I got the scions from there, and still keep it. It is a good, early bearer; bears as early as the Maiden's Blush; a nice keeping apple, and a good grower in the nursery. It is very full this year.

Mr. Sedgewick was asked whether he left all the wood on his grape-vine to get such a yield as he spoke of. He replied: I cut the vine back to three eyes on each limb; did not leave all the wood on. I have another grape here, the White Ann Arbor; have been acquainted with it three years; it is a fine grower, a good bearer, and a good grape. I have here, also, the Francis B. Hayes; it was set in 1886, and bore seventy bunches this year. It is a fine appearing grape, and, I believe, one of the finest flavored grapes we have. I think it is perfectly hardy.

The President. What is the experience of members here on white grapes? Are they as hardy as the higher colored ones, or are they more tender?

Benjamin Stratton. My experience is that those I have tested are not as hardy, but I have tested but few. The Prentiss is the most successful that I have tried, but it is not as hardy as the Concord.

Samuel Thatcher. My experience is that there is nothing as hardy as the Concord in white grapes, unless it be the Pocklington.

Isham Sedgewick. I have six or seven white grapes on trellises, and have never taken any of them off. Winter before last the temperature went to 17° below zero, but they all proved hardy. The varieties are Lady Washington, Pocklington, Niagara, Martha, Francis B. Hayes, Duchess, Centennial and Empire State. The Duchess was nipped a little at the end of the vine, where the wood was not ripe. I am sorry to say of the Empire State that it mildewed and spoiled the crop. I neglected to bring any specimens of the Centennial; it is a little larger than the Delaware; good bunches when well grown, and of the finest flavor I ever tasted; it is freer from foxiness than the Delaware, or anything else of that kind.

The Secretary. Is it a profitable grape?

Mr. Sedgewick. It does not grow so good as I would like; it seems to lack vigor.

Mr. Sedgewick was asked what he considered his choice variety. He said:

I am now fruiting fifteen varieties. If planting only one, I would plant Niagara; it is hardy, an excellent grower, and a magnificent grape in bunch; it is the best grower except Faith. In noticing the Pocklington, I find three distinct grapes cultivated under that name. I saw one at Mr. Thomas Morris', of a peculiar flavor and odor, entirely different from anything I have ever seen. It is the same size and shape and kind of bunch as the Golden Pocklington, but has not quite the same leaf. The Pocklington as seen in the vine of the originator has a leaf somewhat convex, and of a little different color and shape than this one. Then there is another that never gets as yellow as the original Pocklington, but stays a little green. I have seen them growing side by side, and they are very distinct.

The President. I want to develop this question before us and fix this idea. Many of us have held off from the Niagara. Can all that have fruited it endorse it?

Samuel Thatcher. I like it first rate; think it is a success.

Mordica Hadley. I bought a vine two years ago last spring, of Albertson & Hobbs, and planted it on the south side of the house. I had a hole dug three feet deep; then I broke up the bones of a horse, put them in a kettle with weak lye, and boiled them about a day. I poured that into the hole, and put in some old shoes and some other things, and planted the vine. I never saw a vine grow so; it nearly covers a trellis sixteen or eighteen by twelve feet. The lower arm is two inches or more through. Last year it bore four bunches, this year about fifteen; I never saw such large and fine bunches; no mildew or rotten bunches; it is a grand vine.

Sylvester Johnson. I think it the best white grape.

Samples of Pocklington were brought in.

Sylvester Johnson. The taste of this grape is the same as of my Niagara.

The President. This is the Pocklington grape.

Some one suggested that perhaps Mr. Johnson had been praising the wrong grape.

Mr. ———. Is there any difference between the Le Conte and Kieffer?

The President. I understand that they are very distinct.

Benj. Stratton. They are just as distinct as any; the Le Conte is a summer pear, soon ripe and done; the Kieffer will keep long after it is ripe. The Le Conte is ripe now; the Kieffer is not developed. Both are claimed to be hybrid.

Isam Sedgewick. The LeConte is about as handsome a tree as I have ever seen; pyramid-shaped and beautiful. Mine is grafted in a Fall Butter, and looks like it would take the tree; that one has not borne yet; it does not winter-kill. Mr. Lawrence has, at the fair grounds, LeConte pears on exhibition; he is engaged in fruit raising in Washington County, Florida.

The Secretary. The LeConte is a distinctly southern pear, and is not adapted to this latitude. The tree is very tender, and the quality of the fruit is not near so good here as in the South.

J. A. Burton and Samuel Thatcher both reported that the LeConte had winter-killed for them.

In answer to a question the secretary stated that the LeConte was propagated by cuttings in the South, but would not do so well in that way here; the Kieffer also could be grown from cuttings, but both it and the LeConte were propagated North, by budding and grafting.

Daniel Bulla. I have a seedling peach tree that bore this year for the first time for four or five years; it produced between four and five bushels, broke all the limbs down; I think there was not room for another peach. It is a free-stone of good size and quality.

Isam Sedgewick. Thos. Morris has a pear, the Garber, which is smoother and nicer than the Kieffer, and bears as full as the tree can hold. He says it is better than the Kieffer.

The Secretary. It belongs to the same class as the Kieffer.

J. A. Burton called attention to the Kentucky Red Cider Crab, and said:

From best accounts, it came from Kentucky; it has the same identical quality as the Hewes, but is four times larger. The cider is rich and will keep without

any reducing. The fruit, when cooked and sweetened, is as good, without cooking down, as apple-butter. Naturally, it is puckering in taste and the cider has the same quality at first. The tree is very hardy.

The Secretary. It is the most popular crab in Kentucky.

The President. I have brought a few specimens of fruit not generally known. Here is my apple to eat this time of year—the summer Rambo; it is one of the finest growers, a round headed tree, bears pretty early, and is a good apple. The Raser peach—a seedling from a seedling, and always produces the same. The Gravenstein is the only Russian apple I ever had that I thought worth anything. I want to stir us up about it. The Sewell Foster Warfield apple is one a good deal of fuss is made about. The tree is hardy, but the fruit is not worth much.

The Secretary. How does the Gravenstein do? Is it productive?

The President. It is very productive. I do not have it on its own root, mine is second graft, but it is a fine apple and a continual crop.

The Secretary. The committee has a very arduous task before it, and may not get through to-night; this meeting could adjourn without waiting further for its report.

Benj. Stratton. The Wilson is an apple grown near Richmond by a man named Wilson. It is ripe now, is saleable, a good cooker, fine qualities, and a very promising apple.

Mordica Hadley. I have four Hoop apple trees, fourteen years old and healthy, but do not bear. They are on dry sugar-tree land. How can I make them bear?

Benj. Stratton. As a remedy for this, I knew of a man who took one-half of the bark off the tree from the limbs to the ground; the next year he took the other half off, new bark being formed in place of the old. I would think root-pruning preferable—something to check the growth. By trimming a cherry tree in August, I had a bountiful crop of cherries the next year.

The President. Summer pruning checks growth, spring pruning makes growth. I had a White Doyenne pear tree that would not bear, and speaking of it to Dr. Robinson he told me to dig down and cut back some of the roots. So I went home and had about one-fifth of the lateral roots cut off about a foot and a half from the tree; the body of the tree was four or five inches through at the time. After that I had plenty of nice Doyenne pears. On the same theory, it seems to me, we can check the Northern Spy and all rampant growers of that class. The cutting should not be done all on one side; cut on each side about the same.

Isham Sedgewick. Here is bunch of grapes Mr. A. G. Hill handed me and asked for a name. It is late, very tough, and good when ripe; it is a good grower and a good bearer, and he wants to know its name.

The Secretary. Is it probably new?

Isham Sedgewick. He bought it but does not know what the name was.

The Secretary. I suggest that it be sent to G. W. Campbell, Delaware, Ohio, he can tell what it is if any one can.

Some remarks were made concerning the sending of specimens of fruit by mail. It was considered to be a safe and convenient way of getting a variety identified; but care should be taken that the specimen be packed solid.

The President. Before adjourning I want to say to the members that if you look around at Ohio, Illinois, Michigan and Missouri you will find they are working more than we. I want each one of you to be a committee to get members to be here next winter. If this meeting has been profitable, and the one at Richmond was also, then we always have that kind. This room would not near hold the Illinois society. They had three hundred in attendance, and every man was a host in himself. We can get along without very much expense in attending, and will be well paid for coming. I had a neighbor once who never would give five cents to belong to a society of this kind, and he bought \$28 worth of trees not suited to the country here—Baldwins, etc.—and the trees are nearly all dead now.

The Secretary. At the winter meeting we will have reduced rates over the railroads, and a three-days' meeting.

The President. We in Hendricks County hold the banner now for the greatest number of members from any county in the State except Marion, and we want to keep it; but if any county can secure more members it can have the banner.

After a few general remarks the society adjourned.

Many of those in attendance brought with them specimens of new and rare varieties of fruits, together with some of the more common sorts to the extent that we had a very creditable, interesting and instructive display. Wayne County is to be complimented on its enterprise and public spirit. Every member from Wayne, and there were several of them, brought one or more baskets of rare specimens of his and his neighbor's fruits. We commend this exhibition of interest in the public good, and say for our winter meeting, "Go thou and do likewise." The fruit committee were compelled to do their work so hastily that they could not make detailed comments on varieties, and may have overlooked some varieties on the tables, but they did the very best they could within the time. Their report is given below.

REPORT OF FRUIT COMMITTEE.

We find on the tables a fine display of fruit, remarkable for beauty, size and the number of new varieties.

Benjamin Stratton's Richmond collection of pears embraced the following varieties: Buffum, Flemish Beauty, Louise, Bonne de Jersey, Swan's Orange (which the committee believes to be the Buerre de Anjou), Long Green (a local name), Duchess de Angouleme, Kieffer, and Glout's Morceau.

PEACHES—A seedling of good size and quality, and one called Dr. Mendenhall's seedling.

APPLES. A large new variety of good quality, and one we think worthy of general cultivation, and recommend that it be called the Wilson. Shenango, Strawberry, and Transcendent Crab.

GRAPES. A seedling of Concord, with bunches more compact and quality nearly as good. Pocklington, Prentiss, Catawba, Wilder, Concord, Clinton and Hartford. Nearly all these grapes were grown in paper sacks. The berries were perfect and highly colored.

Jacob D. Hamston, Votaw. Collection of apples. Maiden's Blush, Tulpehocken, Ben Davis, Kaighn's Spitzenburgh, Gabriel, Rhode Island Greening, Autumn Strawberry, a variety called Grey Pippin, said to be valuable, Stark, White Pippin.

PEARS. A seedling pear grown in the edge of a forest. The fruit of fair size and quality, much resembling an apple. The committee are willing to name it Chester.

James Saunders, Westfield. Apples. Wealthy, Pewaukee, and Chickasaw Plum.

Daniel Bulla, Richmond. Apples. Maiden's Blush, Vandiver Pippin, Holland Pippin, Newton Spitzenburgh, Kawle's Genet, Rhode Island Greening, Indiana Favorite, Rome Beauty and five varieties the committee could not name.

PEARS. Kieffer and Swan's Orange. A fair size open stone peach resembling Crawford's Late and about the same quality.

S. H. Frazier, Danville. Apples. Wealthy, Pewaukee, Grime's Golden, Gravenstein, Broadwell's Sweet and a variety unknown, of good size and quality.

PEARS. Buffum and Seckel.

Francis Prichard, Thorntown. Apples. Lawver, Bergener, Pewaukee and Mann apple.

Samuel Thatcher, Morristown. Apples. Three varieties the committee was unable to name. Seedling peach, and a collection of grapes, among which were the Pocklington and Niagara.

Jos. C. Ratliff, Richmond. Apples. Blue Pearmain, Sweet Russet, Maiden's Blush, Ben Davis and two varieties, one supposed to be the Stark, and the other not known to the committee. Pears. Swan's Orange, Flemish Beauty and Bartlett.

Abraham Gaar, Richmond. Apples. Maiden's Blush, Red Sweet Pippin, Bellflower, White Pippin, Smith's Cider, Roman Stem, Tulpehocken, Northern Spy, Gloria Mundi, Colvert, Fameuse, Indiana Favorite, Winesap and two varieties not known.

Samuel Dinsmore, Richmond. Apples. Delaware Red, Bellflower, White Winter Pearmain, and one name not known. Peaches. Three varieties, good specimens.

J. F. Coffin, Greenfield. Grapes. Five varieties, one of which, a seedling of the Delaware, we were much pleased with. It is a black grape, a full size larger than the parent, clusters compact and quality very good. It is said to be hardy and productive.

Jesse C. Stevens, Centerville. Apples. Twenty Ounce, Bailey's Sweet, Ben Davis, Rome Beauty, White Winter Pearmain, Grime's Golden, Rambo, Roxberry Russet, Indiana Favorite, White Pippin. Three varieties of crabs and Chickasaw plums. Also several varieties the committee could not name. Altogether it was a nice collection.

Dr. C. V. Gifford, Kokomo. Apples. Wealthy, and three varieties the committee was unable to name, one of which was a fine specimen, and we believe ought to have a place in our catalogue.

Isham Sedgwick, Richmond. Grapes. Lady Washington, Niagara, Frances B. Hayes, a white grape of fine quality; Perkins, Faith and Delaware.

Thomas B Morris, Richmond. Pears. Kieffer and Garber Hybrid. Grapes. Brighton, fine large cluster; Pocklington, Concord, Worden, Diana and Catawba. The two above collections were remarkably fine, and were creditable to the growers.

James Besson, Richmond. Prentiss grapes.

Henry Hatchler, Richmond. White Ann Arbor grape.

Gurney Hill, Richmond. White grape, quite large, name not known.

The exhibit, taking it altogether, was one of much interest, as it contained so many varieties of fruit out of season, at our winter meetings.

Respectfully submitted,

JOS. C. RATLIFF,
JAMES SANDERS,
PROF. J. TROOP,
DR. C. C. CORNETT,
J. D. HAMPTON.

JANUARY FRUIT EXHIBIT.

The January fruit exhibit by the Society, in our room in the State House, during the session of the Legislature, was a marked success. There were about three hundred plates of apples, pears and crabs, embracing all the old reliable sorts and many new ones. Some of the florists of the city assisted us very much in making the tables attractive, by kindly loaning the use of some of their choice flowers and plants. The display was kept up two weeks, and during this time hundreds of persons visited the room daily, compared varieties, discussed their merits, etc. The display was a good educator, and did much to call attention to the importance of horticulture, and to what the State Horticultural Society is doing to increase horticultural information. This experiment will bear repeating. The thanks of the Society are due Sylvester Johnson and W. H. Lawrence, who chiefly had charge of the exhibit; Mr. Lawrence giving most of his time for two weeks to the care of the exhibit. The Society is also indebted to those who donated fruits and flowers for the display.

The last Legislature appropriated \$2,400 to the Indiana Horticultural Society, the appropriation covering a period of three years. We are glad to acknowledge this recognition of State Horticulture. We shall do our utmost to so apply the funds as to bring the greatest good to the horticultural interests of the State.

The Board of Horticulture met in June last and decided to offer \$250 in premiums on fruit at the coming State Fair, \$175 in premiums to local horticultural societies and \$75 in individual premiums; \$50 for arranging display, etc.

INDEX.

A

	PAGE.
Annual Meeting of Board of Agriculture	70
Address of President.	73
Address of Gov. Gray	95
Discussion on County Fairs	98
Remarks of Prof. J. H. Smart	105
Fertility of Soil—Discussion	117
Soil Cultivation—Discussion	120
Trades and Professions Connected with Agriculture	122
Adjournment <i>Sine Die</i>	127
Adjournment of Old Board	127
Acton District, report of	278
Arcadia District, report of.	278

B

Barley, statistics of	32
Buckwheat, statistics of	37
Butter Product, statistics of	57
Board Meeting—February.	63
Annual.	70
Organization of New Board—1889	128
Boone County, report of	246
Bridgeton Union, report of	279
Bee Keepers—Proceedings.	460
President's Address	460
Paper—Method of Obtaining Straight Combs.	462
Paper—Theoretical Apiarists	464
Discussion—Heat Used in Wintering Bees	467
Paper—To Prevent too Much Increase	469
Discussion—Exchanging Bees.	470
Officers 1890.	471

C

Crops, Ten Years Review in Indiana	17
Crops, statistics of	22
Corn, statistics of.	22
Cattle, statistics of.	48
Cheese Product, statistics of	57
Coal Product, statistics of	62
County Fairs, value and importance of.	98

	PAGE.
Commercial Fertilizers—Analysis by State Chemist	235
County and District Reports	246
Carroll County, report of	246
Cass County, report of	247
Clinton County, report of	248
County Agricultural Societies—Officers	296
Entries	299
Premiums Paid	302
Receipts and Disbursements.	305
Cane Growers—Proceedings	472
President's Address	472
Paper—Time of Planting Cane	476
Paper—Natural Gas as Applied to Sorghum Manufacture	478
Paper—Sorghum and its Products.	481
Paper—Sorghum Making	487
Paper—Harvesting Cane.	489
Paper—Sorghum Evaporator	491

D

Death of Domestic Animals, table of	53
Dairy Interest, review of	56
Drain Tile, statistics of	61
Delegates to annual meeting, list of.	71
Discussion—Is There Stock Enough to Keep Up Fertility of Soil?	117
How Can Soil be Most Profitably Cultivated?	120
Trades and Professions Connected with Agriculture	122
Dubois County, report of	249
Delaware County, report of	249
Decatur County, report of	250
District Agricultural Societies, officers	298
Entries	301
Premiums paid.	304
Receipts and disbursements	307

E

Executive Committee meetings	66
Exposition meetings.	68
Executive Committee meetings	69
Experimental Stations—Address by Professor Smart.	105
Election of new members	119
Election of officers, 1889	128
Essay—Woman's Work. By Mrs. Ida A. Harper, Terre Haute	214
Soil Cultivation. By Hon. John Q. A. Sieg.	219
How to Secure Better Results in Farming. By Hon. W. B. Seward.	223
Forests and Drouths. By Dr. Daniel Berry.	226
Healthy Homes. By Dr. Felix L. Oswald.	232
Eastern Indiana, report of.	293
Exhibit of Indiana Agricultural Societies, 1888.	296

F

Flaxseed, statistics of	36
Fencing, statistics of.	60
Farmers' Institutes, report of committee	108
Fertility of soil and relation of stock thereto.]	117

	PAGE.
Farmers' Institute—Johnson County	182
Advantages of,	183
Madison County	186
Essay—New Potatoes	187
What Horses Farmers Should Raise	190
Dairy Farming	192
Our Kitchen Interests	197
Orchard and Fruit	205
Professor Smart's Address.	207
Swine Breeding	209
Resolutions.	213
Forest and Drouth, essay on.	231
Fertilizers—Analyses. By State Chemist.	235
Table I	240
Table II	242
Law.	244
Fulton County, report of.	251
Fairmount Union, report of.	280
Fountain, Warren and Vermillion, report of.	281
Florists' State Society, proceedings	492
Presidents	492
Secretary's report	495
Report Exhibition Committee.	496
Discussions	498-501
Paper—Chrysanthemum Culture	502
Value of Exhibitions	506
Elevate Your Calling	508
Carnation Culture	511
Chrysanthemums—Their Origin.	512
Points of Cryptogamans.	513
Violets—Their Culture and Diseases	520
Discussion—Chrysanthemum Exhibition	522
Paper—Beautifying Home Grounds.	524
List of members	533

G

Grasses	32
Governor Gray's remarks to Delegate Board of Agriculture	95
Greene County, report of	252
Gibson County, report of	253
Grant County, report of	254
Governor Hovey's remarks to Short-horn Breeders	351
" " " to Wool Growers	409

H

Hay, timothy, statistics of	28
Clover, statistics of.	30
Hogs, statistics of	48
Horses, statistics of	50
Healthy Homes—Essay on.	232
Hamilton County, report of.	255
Harrison County, report of.	256
Henry County, report of.	257
Howard County, report of.	257

	PAGE.
Huntington County, report of	258
Horse Breeders' Association—Proceedings	308
Members	308
Officers	311
Horticultural Society of State.	534
List of officers, 1888	534
Constitution	535
List of members	536
Annual meeting	539
Secretary's report	542
Report of Committee on Obituaries	548
Paper—Spraying Fruit Trees	549
Paper—Entomology	555
Paper—Care of a Young Orchard	558
Report of meeting American Horticultural Society	564
Report of experiment stations.	573
List of strawberries	574
Paper—The Strawberry	580
Paper—Small Fruits	584
Paper—Relative Growth of Native and Foreign Trees	589
Address—Experimental Work.	592
Paper—Lucretia Dewberry	597
Report from Fifth District.	598
Address by Prof. Latta, of Purdue	601
Report from Second District.	608
Officers, 1889	613
Report of Committee on Nomenclature.	615
Fruit from Fort Wayne District.	615
Report from Third District	616
Report from local societies	617
Summer meeting at Richmond	622
Raspberries.	628
Blackberries	631
Sacking grapes	633
Gooseberries	636
Currants	636
State Fair meeting.	645
Report of Fruit Committee	653
January fruit exhibit	655

J

Jackson County, report of	259
Jefferson County, report of	259
Jay County, report of	260
Jasper County, report of.	261
Jersey Breeders—Proceedings.	355
Secretary's report	355
President's Address	355
Progress in 1888	356
Paper on—Thoroughbred Jersey Breeding	358
Paper by Mrs. Kate Busick—Our Jerseys	365
Paper on—Work of the Chemist in Testing Animals	371
Paper on—Aromatic Butter Automatically Produced	374
Officers 1890.	376

K

	PAGE.
Knox County, report of	262
Knightstown Union, report of	281

L

Live Stock—Review of	44
Disease and death	45
Statistics of.	48
Lake County, report of	262
La Porte County	263
Lawrence District, report of.	282
Loogootee District, report of	282

M

Mules, statistics of.	50
Milk Product.	57
Memorial and Resolutions—Dr. A. C. Stevenson	113
Mechanical Department—Classified Exhibits	173
Monroe County, report of	264
Marion County, report of	264
Montgomery County, report of	265
Madison County, report of.	286
Miami and Fulton Counties, report of	283

N

Nominations for New Members	97
Newton County, report of	266
Noble County, report of	267
Northeastern Indiana, report of.	284
North Manchester, Tri-County report of	285
North Salem District, report of	286
Northern Indiana and Southern Michigan, report of.	288

O

Oats, statistics of.	26
Orleans District, report of	286

P

Potatoes, Irish, statistics of	39
Sweet, statistics of.	40
Premium Awards State Fair, 1888	129
Cattle.	129
Horses	133
Speed.	137
Sheep.	139
Hogs	141
Poultry.	144
Dogs	147
Farm Products.	148
Horticultural Department.	153
Geology and Natural History	156
Woman's Department.	157
Childrens' Department	170

	PAGE.
Potatoes—Essay on Desirable Ones to Plant	187
Posey County, report of	268
Pulaski County, report of	268
Porter County, report of	268
Pike County, report of	269
Parke County, report of	270
Plainfield District, report of	287
Programme Short-horn Breeders, 1890.	353
Poultry Breeders—Proceedings	441
Classes	442
Scale of Points and Scoring	444
Second Annual Meeting	445
Constitution	447
By-Laws	448
Prizes on Chickens.	449
Prizes on Dogs	456
List of Members	459

R

Rye—Statistics of	34
Report of Secretary, 1888	77
Treasurer, 1888	82
General Superintendent, 1888	83
President of the Woman's Department.	85
Secretary of the Woman's Department	87
Cattle Department, dairy breeds	88
Cattle Department, beef breeds	89
Horse Department	90
Sheep Department	90
Hog Department.	91
Poultry Department	91
Dog Department	92
Agricultural Department	93
Geological Department	94
Grand stand	94
Gates	95
Committee on Farmers' Institutes	108
Randolph County, report of	270
Rush and Shelby, report of	288
Rockport District, report of	289

S

Statistics of Indiana crops	22
Seed—Clover and timothy	31
Statistics—Table of crop yield and valuation for ten years	42
Sheep and lambs, statistics of	52
Killed by dogs—Table showing number.	53
Stevenson, Dr. A. C.—Memorial	113
Remarks on life of	115
Spencer County, report of	271
Sullivan County, report of	272
Steuben County, report of	273
Shelby County, report of	274
Switzerland and Ohio, report of	292

	PAGE.
Short-Horn Breeders—Proceedings	314
President's Address	314
Secretary's report	317
Treasurer's report	318
Breeders' essay on—Fluctuations in Cattle Market	320
Discussion of essay	323
Essay on—Ensilage and Beets as Winter Feed	326
Discussion of paper	331
Discussion of Pedigrees	333
Report on death of Dr. A. C. Stevenson.	335
Paper on—Selection of Calves as Feeders	336
Future of Short-horns	338
Prize of \$250 for milkers	343
Paper on—Points of a Good Short-Horn	344
Discussion of—Points of a Good Short-Horn	345
Paper on—Rearing of Short-Horns	349
Governor Hovey's remarks	351
Programme, 1890	353
Swine Breeders—Proceedings.	414
President's Address	414
Report of standing committees	415
Paper on—Benefits of Public Sales to Breeders.	417
Paper on—Best Crosses to Breed for Market	419
Discussion—Are Fall Litters Profitable?	422
Discussion—Is it Profitable to Feed Clover?	423
Paper on—Is it Policy to Raise Three Litters a Year?	424
Paper on—Best Mode of Feeding for Market	425
Paper on—Artificial Marks	429
Discussion—Which is Best Breeder, an Old or Young Boar?	432
Programme, 1890	435
Paper on—Cause of Swine Disease	436
T	
Tobacco, statistics of.	38
Tippecanoe County, report of	274
Tipton County, report of	275
U	
Urmeyville District, report of	290
V	
Vigo County, report of.	275
Veterinarians, State Association	312
State Association officers	312
Meat inspection	313
W	
Wheat, statistics of	24
Woman's Work, essay on	214
Warrick County, report of	276
Wabash County, report of	277
Warren Tri-county, report of	290
Wayne, Henry and Randolph, report of.	294

	PAGE.
Wool Growers, proceedings	378
President's address	378
President's address discussed	382
Paper on "Profitable Sheep for Indiana"	383
Paper on "Value of Pedigrees"	387
Value of pedigrees discussed	389
Paper on "Sheep Husbandry"	392
Paper on "Qualifications of Experts"	395
Discussion of Live Stock Sanitary Commission	397
Remarks on the death of Dr. A. C. Stevenson	399
Paper on "Management of Early Lambs"	401
Programme for 1890	408
Governor Hovey's remarks	409
Paper on "American Wool for the Manufacturer"	410

X

Xenia Union, report of.	291
---------------------------------	-----

